

THE HONORABLE THOMAS S. ZILLY

UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF WASHINGTON
AT SEATTLE

REX - REAL ESTATE EXCHANGE, INC.,

Plaintiff,

v.

ZILLOW, INC., et al.,

Defendants.

Case No. 2:21-CV-00312-TSZ

**DECLARATION OF GLENN
HUBBARD**

[REDACTED - PUBLIC VERSION]

I, Glenn Hubbard, declare as follows:

1. The matters set forth herein are based on my own personal knowledge. If called upon, I could and would testify competently to the matters set forth herein.

2. I am the Dean Emeritus of the Graduate School of Business of Columbia University, where I also hold the Russell L. Carson Professorship in Finance and Economics. I am also a Professor in the Department of Economics of the Faculty of Arts and Sciences at Columbia. My teaching at Columbia has concentrated on finance, financial markets, macroeconomics, and public economics. I am a research associate at the National Bureau of Economic Research in programs on corporate finance, public finance, industrial organization, monetary economics, and economic fluctuations and growth. I am also a visiting scholar at the American Enterprise Institute in programs on tax policy and financial markets. Since 2006, I have been the Co-chair of the Committee on Capital Markets Regulation, a nonpartisan

1 organization offering analyses and policy advice on financial regulation.

2
3 3. I hold A.M. and Ph.D. degrees in Economics from Harvard University, and
4 B.A. and B.S. degrees in Economics from the University of Central Florida, *summa cum*
5 *laude*.

6 4. My professional work has centered on problems in corporate finance, public
7 economics, industrial organization, monetary economics, and natural resource economics. I
8 have authored more than 100 publications, edited a number of books, and authored leading
9 textbooks on money and financial markets, macroeconomics, and principles of economics.

10 5. I have been retained by counsel for Zillow, Inc., Zillow Group, Inc., Zillow
11 Homes, Inc., Zillow Listing Services, Inc., and Trulia, LLC (collectively, “Zillow”) in the
12 above-captioned matter. I have been asked by counsel to review and comment on certain
13 opinions set forth in the Expert Report of W. Robert Majure, Ph.D. submitted on behalf of
14 REX – Real Estate Exchange, Inc. (“REX” or “Plaintiff”).¹

15 6. Attached as **Exhibit A** to this declaration is a true and correct copy of my
16 rebuttal expert report in this matter, dated April 30, 2021. This expert report contains a
17 summary of the opinions I would render if called upon to testify in this matter. I adopt and
18 incorporate the opinions in this expert report as though fully set forth in this declaration. A
19 copy of my *curriculum vitae* is attached as **Appendix A** to this expert report. **Appendix B** to
20 this expert report lists my testimony in the past four years. The materials and data upon which
21 I have relied in reaching my conclusions are listed in **Appendix C** of this report or cited in the
22 report and exhibits to this expert report.

23 7. Based on my analysis to date, the summary of my opinions regarding the
24 analyses in the Majure Report and Majure Supplemental Analysis is as follows:

- 25 a. Zillow’s decision to join local MLSs and switch to obtaining MLS
26 listings data directly from IDX data feeds was driven by its desire to: (1)

27 ¹ Expert Report of W. Robert Majure, Ph.D., March 9, 2021 (“Majure Report”). *See also*, Declaration of W.
28 Robert Majure in Support of Motion for Preliminary Injunction, March 9, 2021. On April 15, 2021, Dr. Majure
also submitted a supplemental analysis to his initial report. Supplemental Analysis to Declaration of W. Robert
Majure, in Support of Motion for Preliminary Injunction (“Majure Supplemental Analysis”).

1 improve the quality and coverage of its listing data for its aggregation
2 service, and lower the costs associated with obtaining and managing
3 those data; and (2) ensure its freedom to innovate in its aggregation
4 services and other businesses, such as Zillow Offers, by ensuring its
5 access to listing data.

- 6
- 7 b. Zillow's decision to redesign its website and mobile application to
8 separate MLS and non-MLS listings across its entire listing base was a
9 unilateral choice made because, given the constraints Zillow faced, the
10 redesign led to a superior user experience, was technically feasible, and
11 was less costly than other available alternatives.
- 12 c. Zillow is not a significant participant in the claimed relevant market for
13 the provision of real estate brokerage services. Zillow participates
14 directly in real estate brokerage services only to a limited extent through
15 its Zillow Homes brokerage business, and it does not independently
16 compete with other brokers, including REX. In particular, unlike
17 traditional brokerage services, Zillow Homes does not offer brokerage
18 services to buyers or sellers of residential properties except when Zillow
19 Offers is involved in the transaction. As such, Zillow Offers does not
20 have an economic incentive to increase the price of brokerage services,
21 which represents a cost to its business.
- 22 d. Dr. Majure has neither explained the nature of Zillow's purported
23 "power to influence the market far beyond its share as an individual
24 participant," nor shown that Zillow has any incentive to limit
25 competition for brokerage services. In addition, Zillow does not appear
26 to have an economic incentive for REX, a paid customer of Zillow's
27 Premier Agent and Broker Boost advertising programs, to exit the
28 brokerage services marketplace.

- 1
- 2 e. Zillow’s relationship with local MLSs is a vertical one, and any limits
- 3 arising from agreements with local MLSs that govern how Zillow must
- 4 display data are vertical restraints. In general, vertical restraints can be
- 5 welfare enhancing, and are not the type of conduct that would always or
- 6 almost always tend to restrict competition and decrease output.
- 7 f. Dr. Majure argues that Defendants’ conduct has “sharply reduced
- 8 REX’s ability to compete with NAR members in the market for real
- 9 estate brokerage services,” which, in turn, harms consumers by
- 10 depriving them of the opportunity to save on commissions through
- 11 REX’s business model. However, Dr. Majure’s claimed average
- 12 commission reductions enabled by REX likely exaggerate potential
- 13 benefits to REX’s customers and, therefore, exaggerate likely potential
- 14 harm to REX’s customers if REX is unable to execute its business
- 15 model. He also fails to establish that REX has exerted, or has the
- 16 potential to exert, any “competitive pressure” on the real estate
- 17 brokerage industry so as to benefit customers of other brokerages.
- 18 g. Dr. Majure fails to address whether Zillow’s decision to join MLSs, and
- 19 switch to obtaining MLS listings data directly from IDX data feeds has
- 20 had, or is likely to have, procompetitive benefits, nor has he weighed
- 21 such benefits against his claims of anticompetitive harms. Overall, the
- 22 evidence suggests that the procompetitive benefits of Zillow’s
- 23 participation in local MLSs and use of IDX data are substantial and
- 24 likely outweigh any harm to REX and REX’s customers stemming from
- 25 Zillow’s display change.
- 26 h. Dr. Majure fails to demonstrate that any harm to REX stemming from
- 27 Zillow’s display change would be irreparable if a preliminary injunction
- 28 is not granted. REX appears to have several strategies available to it that

1 would mitigate, in large part, any alleged harm to its business, or would
2 result in monetary harm that could be recovered if it prevailed in court.
3 On the other hand, a preliminary injunction has the potential to cause
4 substantial harm to Zillow, as it would render Zillow non-compliant
5 with many of its local IDX agreements and result in Zillow losing
6 access to listings in those areas, causing significant harm to Zillow's
7 aggregation services.
8

9
10 I declare under the penalty of perjury under the laws of the United States of America
11 that the foregoing is true and correct.

12 EXECUTED this 30th day of April 2021, at New York, NY

13 

14 _____
Glenn Hubbard
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EXHIBIT A
FILED UNDER SEAL

**UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF WASHINGTON
AT SEATTLE**

REX – Real Estate Exchange, Inc.,

Plaintiff,

v.

ZILLOW, INC., et al.,

Defendants.

Case No. 2:21-cv-00312-TSZ

REBUTTAL EXPERT REPORT OF GLENN HUBBARD

April 30, 2021

REBUTTAL EXPERT REPORT OF GLENN HUBBARD

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REBUTTAL EXPERT REPORT OF GLENN HUBBARD

I. QUALIFICATIONS

1. My name is Glenn Hubbard. I am the Dean Emeritus of the Graduate School of Business of Columbia University, where I also hold the Russell L. Carson Professorship in Finance and Economics. I am also a Professor in the Department of Economics of the Faculty of Arts and Sciences at Columbia. My teaching at Columbia has concentrated on finance, financial markets, macroeconomics, and public economics. I am a research associate at the National Bureau of Economic Research in programs on corporate finance, public finance, industrial organization, monetary economics, and economic fluctuations and growth. I am also a visiting scholar at the American Enterprise Institute in programs on tax policy and financial markets. Since 2006, I have been the Co-chair of the Committee on Capital Markets Regulation, a nonpartisan organization offering analyses and policy advice on financial regulation. Prior to joining the Columbia faculty as Professor of Economics and Finance in 1988, I taught in the Department of Economics at Northwestern University. I have also served as Visiting Professor of Business Administration at Harvard Business School, John M. Olin Visiting Professor at the University of Chicago, Visiting Professor and Research Fellow of the Energy and Environmental Policy Center at Harvard University's John F. Kennedy School of Government, and John M. Olin Fellow at the National Bureau of Economic Research. I hold A.M. and Ph.D. degrees in Economics from Harvard University, and B.A. and B.S. degrees in Economics from the University of Central Florida, *summa cum laude*.
2. My professional work has centered on problems in corporate finance, public economics, industrial organization, monetary economics, and natural resource economics. I have authored more than 100 publications, edited a number of books, and authored leading textbooks on money and financial markets, macroeconomics, and principles of economics.
3. I have been an advisor or consultant to the Board of Governors of the Federal Reserve System, Congressional Budget Office, Federal Reserve Bank of New York, Internal Revenue Service, International Trade Commission, National Science Foundation, U.S. Department of Energy, and U.S. Department of the Treasury. From 1991 to 1993, I served as Deputy Assistant Secretary (Tax Analysis) of the U.S. Department of the Treasury, where I was responsible for economic analysis of tax policy, the administration's revenue estimates, and health care policy issues. From 2001 to 2003, I served as Chairman of the President's Council of Economic Advisers. Over that time period,

I also served as Chair of the Economic Policy Committee for the Organization for Economic Cooperation and Development in Paris. A copy of my *curriculum vitae* is attached as **Appendix A**. **Appendix B** lists my testimony in the past four years.

II. ASSIGNMENT AND PLAINTIFF’S ALLEGATIONS

A. Assignment

4. I have been retained by counsel for Zillow, Inc., Zillow Group, Inc., Zillow Homes, Inc., Zillow Listing Services, Inc., and Trulia, LLC (collectively, “Zillow”) in the above-captioned matter. I have been asked by counsel to review and comment on certain opinions set forth in the Expert Report of W. Robert Majure, Ph.D. submitted on behalf of REX – Real Estate Exchange, Inc. (“REX” or “Plaintiff”).¹ Specifically, I have been asked to address the following issues:
 - (a) whether Zillow’s alleged conduct—switching the way it obtains property listings to local Multiple Listing Services (“MLSs”) via Internet Data Exchange (“IDX”) data feeds, abiding by IDX policies required by local MLSs, and redesigning Zillow’s websites and Mobile Apps—has caused, or is likely to cause, a significant anticompetitive effect on residential real estate brokerage by reducing REX’s ability to compete;
 - (b) whether the alleged conduct (as defined above) has brought, or is likely to bring, procompetitive benefits that outweigh any potential anticompetitive effects of a reduction in REX’s ability to compete;
 - (c) whether REX is likely to suffer irreparable harm; and
 - (d) whether a preliminary injunction would cause Zillow substantial harm.
5. The materials and data upon which I have relied in reaching my conclusions are listed in **Appendix C** of this report or cited in this report and exhibits. My work in this matter is ongoing,

¹ Expert Report of W. Robert Majure, Ph.D., March 9, 2021 (“Majure Report”). *See also*, Declaration of W. Robert Majure in Support of Motion for Preliminary Injunction, March 9, 2021. On April 15, 2021, Dr. Majure also submitted a supplemental analysis to his initial report. Supplemental Analysis to Declaration of W. Robert Majure, in Support of Motion for Preliminary Injunction (“Majure Supplemental Analysis”).

and I may review additional materials or conduct further analysis. I reserve the right to update, refine, or revise my opinions.

6. My billing rate for time spent on this matter is \$1,500 per hour. This compensation is not contingent upon my findings or on the outcome of this litigation.
7. Employees of Analysis Group, Inc., an economics research and consulting firm, working under my direction and supervision, have assisted me in this assignment at standard hourly rates charged by that firm. Consistent with industry practice, I also receive compensation based on the professional fees earned by Analysis Group in conjunction with their support for this report. This compensation is not contingent upon my findings or on the outcome of this litigation.

B. Overview of Plaintiff's Allegations

8. On March 9, 2021, REX filed suit against Zillow and the National Association of Realtors ("NAR") alleging that REX's "innovative and competitive model" is threatened by certain display changes on Zillow's websites made in accordance with Zillow's recent decision to join NAR-affiliated MLSs and obtain property listings from IDX data feeds.² REX specifically alleges that: "Defendants NAR and Zillow, with non-party MLSs, entered into a horizontal combination, agreement, and/or conspiracy to boycott and deprive non-MLS, non-NAR members, including REX, effective access to prominent Zillow residential real estate aggregator websites, which restrains trade among competitors."³
9. In September 2020, Zillow announced that it would become a participant in the NAR and affiliated MLSs across the United States, and would begin sourcing the MLS listings displayed on its webpages from the MLS IDX data feeds.⁴ The use and display of IDX data are governed by several policies and rules set forth by the NAR and ultimately adopted (or not adopted) by each individual MLS. One optional NAR policy that has been adopted by the majority of local MLSs requires that: "[l]istings obtained through IDX feeds...must be displayed separately from listings obtained from

² Complaint for Injunctive Relief and for Damages, March 9, 2021 ("Complaint"), at pp. 3-4.

³ Complaint, at p. 37.

⁴ Complaint, at p. 19; <https://www.zillow.com/agent-resources/blog/creating-a-better-real-estate-experience/> (accessed April 1, 2021).

other sources” (the “No Comingling Policy”).⁵ In compliance with this policy, in mid-January 2021, Zillow changed its website displays nationwide to show listings in two separate categories, or tabs: “Agent Listings” (which includes homes listed by MLS agents) and “Other Listings” (which includes all non-MLS homes, including those listed by REX’s agents).⁶

10. REX alleges that this IDX policy to segregate MLS listings is anticompetitive and prevents brokers who do not participate in the NAR/MLSs, like REX, from offering an alternative to the MLS system for the foreseeable future.⁷ REX alleges that Zillow’s new web design harms consumers (buyers and sellers of homes) by reducing choice (as sellers may feel forced to do business with the NAR/MLS to have better visibility on Zillow’s website, and buyers may never see non-MLS listings), driving consumers to higher-commission MLS network homes, and suppressing competition from REX, which offers consumers opportunities to reduce commissions.⁸ According to REX, as a result of Zillow’s display change: “REX’s listings are losing significant traffic, severely impacting REX’s reputation, its ability to execute its innovative and disruptive business model, and driving customers away from REX and back into the MLS regime.”⁹
11. I understand that REX is seeking a preliminary injunction which, if granted, would require Zillow to revert to displaying MLS-listed and non-MLS-listed properties together on its websites. I also understand that such an action would render Zillow non-compliant with some of its contracts with MLSs (both NAR and non-NAR affiliated), which would threaten Zillow’s access to IDX data feeds for those MLSs, potentially preventing it from displaying to consumers property listings obtained from those MLSs.¹⁰

⁵ Complaint, at p. 30; NAR 2021 Handbook on Multiple Listing Policy, available at https://cdn.nar.realtor/sites/default/files/documents/2021_NAR_HMLP_210112.pdf (“NAR 2021 Handbook”), at p. 86 (Section 18.3.11).

⁶ Complaint, at pp. 22-23, 30.

⁷ Complaint, at pp. 29-31.

⁸ Complaint, at p. 28.

⁹ Complaint, at p. 4.

¹⁰ Declaration of Errol Samuelson (Chief Industry Development Officer at Zillow Group), April 30, 2021 (“Samuelson Declaration”), at pp. 26-27.

C. Summary of Majure Report

12. On March 9, 2021, Dr. W. Robert Majure submitted a report on behalf of REX, in which he analyzed certain economic issues related to REX's allegations against Zillow and the NAR. Among other opinions, Dr. Majure claims that Zillow's display changes, allegedly pursuant to the NAR's No Comingling Policy, resulted in REX's listings being disfavored and caused: "significant reductions in the buyer interest [REX] could generate without co-listing properties with an MLS member."¹¹ According to Dr. Majure, because REX's model allegedly results in lower average combined commissions for residential real estate transactions: "[c]onsumers are likely to be irreparably harmed by the reduction in REX's ability to compete with NAR members."¹² Dr. Majure also claims that Zillow's display change, as required by NAR/MLS policies: "impede[s] REX's ability to sell homes outside of the MLS" and will likely cause irreparable harm to REX and its ability to "bring competitive pressure on real estate brokerage commissions enjoyed by NAR members."¹³
13. In addition, Dr. Majure opines that the relevant antitrust market from an economic perspective is the market for real estate brokerage services, and that NAR's members possess market power in that market. He claims that Zillow provides an input to the market for real estate brokerage services as an online aggregator of available properties,¹⁴ and concludes that: "[c]ontrol of this input gives Zillow power to influence the market far beyond its share as an individual participant."¹⁵
14. On April 15, 2021, Dr. Majure submitted a supplemental analysis in which he analyzes data on how the number of views of certain REX-listed properties on Zillow changed after they were co-listed on the MLS and their display on the Zillow website was changed from the "Other Listings" tab to the "Agent Listings" tab.¹⁶ In that supplemental analysis, he finds that: "views by potential buyers of REX listings that switched from the 'Other' tab to the 'Agent' tab increase significantly

¹¹ Majure Report, at pp. 5, 19-25.

¹² Majure Report, at pp. 5, 25-29.

¹³ Majure Report, at pp. 5, 29-32.

¹⁴ In addition, Dr. Majure claims that Zillow participates directly in the market for real estate brokerage services to a limited extent through its Zillow Offers and Zillow Homes businesses. Majure Report, at p. 18.

¹⁵ Majure Report, at pp. 5, 18-19.

¹⁶ Majure Supplemental Analysis, at p. 2.

– for the sample I analyzed, the increase averaged over 500%.”¹⁷ He concludes that the analysis: “further corroborates my finding ... that Defendants’ segregation of REX listings ... caused REX to face ‘significant reductions in the buyer interest it could generate without co-listing properties with an MLS member...”¹⁸

III. SUMMARY OF CONCLUSIONS

15. Based on my analysis to date, my opinions regarding the analyses in the Majure Report and Majure Supplemental Analysis are as follows:
16. Zillow’s decision to join local MLSs and switch to obtaining MLS listings data directly from IDX data feeds was driven by its desire to: (1) improve the quality and coverage of its listing data for its aggregation service, and lower the costs associated with obtaining and managing those data; and (2) ensure its freedom to innovate in its aggregation services and other businesses, such as Zillow Offers, by ensuring its access to listing data. In addition, Zillow’s decision to redesign its website and mobile application to separate MLS and non-MLS listings across its entire listing base was a unilateral choice made because, given the constraints Zillow faced, the redesign led to a superior user experience, was technically feasible, and was less costly than other available alternatives.
17. Zillow is not a significant participant in the claimed relevant market for the provision of real estate brokerage services. Zillow participates directly in real estate brokerage services only to a limited extent through its Zillow Homes brokerage business, and it does not independently compete with other brokers, including REX. In particular, unlike traditional brokerage services, Zillow Homes does not offer brokerage services to buyers or sellers of residential properties except when Zillow Offers is involved in the transaction. As such, Zillow Offers does not have an economic incentive to increase the price of brokerage services, which represents a cost to its business.
18. Dr. Majure has neither explained the nature of Zillow’s purported “power to influence the market far beyond its share as an individual participant,”¹⁹ nor shown that Zillow has any incentive to limit competition for brokerage services. In addition, Zillow does not appear to have an economic

¹⁷ Majure Supplemental Analysis, at p. 2.

¹⁸ Majure Supplemental Analysis, at p. 3.

¹⁹ Majure Report, at p. 5.

incentive for REX, a paid customer of Zillow's Premier Agent and Broker Boost advertising programs, to exit the brokerage services marketplace.

19. Zillow's relationship with local MLSs is a vertical one, and any limits arising from agreements with local MLSs that govern how Zillow must display data are vertical restraints. In general, vertical restraints can be welfare enhancing, and are not the type of conduct that would always or almost always tend to restrict competition and decrease output.
20. Dr. Majure argues that Defendants' conduct has "sharply reduced REX's ability to compete with NAR members in the market for real estate brokerage services,"²⁰ which, in turn, harms consumers by depriving them of the opportunity to save on commissions through REX's business model. However, Dr. Majure's claimed average commission reductions enabled by REX likely exaggerate potential benefits to REX's customers and, therefore, exaggerate likely potential harm to REX's customers if REX is unable to execute its business model. He also fails to establish that REX has exerted, or has the potential to exert, any "competitive pressure" on the real estate brokerage industry so as to benefit customers of other brokerages.
21. Dr. Majure fails to address whether Zillow's decision to join MLSs, and switch to obtaining MLS listings data directly from IDX data feeds has had, or is likely to have, procompetitive benefits, nor has he weighed such benefits against his claims of anticompetitive harms. Overall, the evidence suggests that the procompetitive benefits of Zillow's participation in local MLSs and use of IDX data are substantial and likely outweigh any harm to REX and REX's customers stemming from Zillow's display change.
22. Dr. Majure fails to demonstrate that any harm to REX stemming from Zillow's display change would be irreparable if a preliminary injunction is not granted. REX appears to have several strategies available to it that would mitigate, in large part, any alleged harm to its business, or would result in monetary harm that could be recovered if it prevailed in court. On the other hand, a preliminary injunction has the potential to cause substantial harm to Zillow, as it would render Zillow non-compliant with many of its local IDX agreements and result in Zillow losing access to listings in those areas, causing significant harm to Zillow's aggregation services.

²⁰ Majure Report, at p. 19.

IV. INDUSTRY BACKGROUND

A. Economics of Brokerage Services

23. In the residential real estate marketplace, brokerage services connect real estate sellers and buyers, and provide information to both sides of the real estate marketplace.²¹ Brokerage services are provided by real estate agents and brokers.²²

1. Agents and Brokers

24. Real estate agents are licensed professionals who work directly with home owners and potential buyers to sell and buy homes.²³ To obtain an agent license, an individual must complete the required trainings and pass a real estate agent license exam.²⁴ An agent can work for a home owner / seller (a “seller’s agent” or “listing agent”), a home buyer (a “buyer’s agent”), or both (a “dual agent” or “transactional agent”).²⁵ The duties of a seller’s agent can include recommending a sales price, finding interested buyers, promoting the home listings on real estate and social network sites, creating advertising for homes, and hosting open houses, showings, and tours, among other things.²⁶ The duties of a buyer’s agent can include identifying potential homes to buy, helping finalize an offer to buy, and suggesting mortgage lenders, home inspectors, and contractors.²⁷ Real estate agents, in general, work for or under the supervision of real estate brokers.²⁸

²¹ Yinger, John, 1981, “A Search Model of Real Estate Broker Behavior,” *American Economics Review*, Vol. 71, No. 4, 591-605 (“Yinger (1981)”), at p. 591; Benjamin, John D., G. Donald Jud, and G. Stacy Sirmans, 2000, “What Do We Know About Real Estate Brokerage,” *Journal of Real Estate Research*, Vol. 20, Nos. 1-2, 5-30 (“Benjamin et al. (2000)”), at p. 6. *See also*, <https://massimo-group.com/what-is-a-real-estate-brokerage/> (accessed April 5, 2021).

²² <https://www.realtor.com/advice/buy/whats-difference-real-estate-salesperson-broker/> (accessed April 28, 2021). *See also*, Federal Trade Commission and the U.S. Department of Justice, April 2007, “Competition in the Real Estate Brokerage Industry” (“FTC (2007)”) at pp. 4-5.

²³ <https://www.realtor.com/advice/buy/whats-difference-real-estate-salesperson-broker/> (accessed April 28, 2021). *See also*, FTC (2007), at pp. 4-5.

²⁴ <https://www.realtor.com/advice/buy/whats-difference-real-estate-salesperson-broker/> (accessed April 28, 2021).

²⁵ <https://www.zillow.com/agent-resources/blog/real-estate-broker-vs-agent/> (accessed April 5, 2021); <https://www.realtor.com/advice/buy/whats-difference-real-estate-salesperson-broker/> (accessed April 28, 2021); <https://massimo-group.com/what-is-a-real-estate-brokerage/> (accessed April 5, 2021).

²⁶ <https://www.zillow.com/agent-resources/blog/real-estate-broker-vs-agent/> (accessed April 5, 2021).

²⁷ <https://www.zillow.com/agent-resources/blog/real-estate-broker-vs-agent/> (accessed April 5, 2021).

²⁸ <https://massimo-group.com/what-is-a-real-estate-brokerage/> (accessed April 5, 2021); FTC (2007), at pp. 4-5.

25. Real estate brokers are licensed professionals that facilitate the process of selling and buying a home and oversee the work of real estate agents.²⁹ Brokers can work for themselves or with other brokerage firms.³⁰ To obtain a broker license, an individual must complete trainings in addition to those that must be completed by a licensed agent and pass a broker license exam.³¹ In addition to the duties of an agent, the duties of a broker can also include verifying the licensing status of the supervised agents, providing trainings for agents, and providing marketing sources for agents.³²
26. According to industry surveys and estimates, in 2020, 89 percent of surveyed home sellers worked with a real estate agent to sell their homes.³³ Alternatively, homeowners can sell their homes without using brokerage services.³⁴ This type of sale is referred to as “for-sale-by-owner” (or, “FSBO”) transactions.³⁵ In 2020, approximately 8 percent of home sales were FSBO transactions.³⁶ On the buyer’s side, in 2020, 88 percent of surveyed consumers who have recently purchased a home did so through a real estate agent or broker.³⁷

²⁹ <https://www.zillow.com/agent-resources/blog/real-estate-broker-vs-agent/> (accessed April 5, 2021); <https://www.realtor.com/advice/buy/whats-difference-real-estate-salesperson-broker/> (accessed April 28, 2021); <https://massimo-group.com/what-is-a-real-estate-brokerage/> (accessed April 5, 2021). *See also*, FTC (2007), at pp. 4-5.

³⁰ <https://massimo-group.com/what-is-a-real-estate-brokerage/> (accessed April 5, 2021).

³¹ <https://www.zillow.com/agent-resources/blog/real-estate-broker-vs-agent/> (accessed April 5, 2021); <https://www.realtor.com/advice/buy/whats-difference-real-estate-salesperson-broker/> (accessed April 28, 2021); <https://massimo-group.com/what-is-a-real-estate-brokerage/> (accessed April 5, 2021).

³² <https://www.thebalancesmb.com/what-is-a-real-estate-broker-2866372> (accessed April 5, 2021).

³³ National Association of Realtors, “2020 Profile of Home Buyers and Sellers,” available at https://www.gaar.com/images/uploads/2020_NAR_Consumer_Profile.pdf, at p. 8.

³⁴ <https://www.rocketmortgage.com/learn/buying-house-for-sale-by-owner> (accessed April 5, 2021); <https://www.inman.com/real-estate-glossary/for-sale-by-owner-fsbo/> (accessed April 5, 2021).

³⁵ <https://www.rocketmortgage.com/learn/buying-house-for-sale-by-owner> (accessed April 5, 2021); <https://www.inman.com/real-estate-glossary/for-sale-by-owner-fsbo/> (accessed April 5, 2021); National Association of Realtors, “2020 Profile of Home Buyers and Sellers,” available at https://www.gaar.com/images/uploads/2020_NAR_Consumer_Profile.pdf, at p. 8.

³⁶ National Association of Realtors, “2020 Profile of Home Buyers and Sellers,” available at https://www.gaar.com/images/uploads/2020_NAR_Consumer_Profile.pdf, at p. 8.

³⁷ National Association of Realtors, “2020 Profile of Home Buyers and Sellers,” available at https://www.gaar.com/images/uploads/2020_NAR_Consumer_Profile.pdf, at p. 7.

27. Agents and brokers are typically compensated in the form of commissions.³⁸ In a typical home transaction, the commission is calculated as a percentage of the home price.³⁹ The total commission for the seller's and the buyer's agents or brokers combined, which is typically paid by the home seller, is often in the range of 5 to 6 percent of the final sales price of the home.⁴⁰ The seller's and buyer's agents or brokers typically split the total commission equally between them.⁴¹
28. Real estate brokers and agents often participate in local MLSs, through which they share information on properties they have listed and invite other brokers to cooperate in their sale in exchange for compensation if they produce the buyer. MLSs facilitate cooperation and information sharing among brokers to ensure successful transactions.⁴² Each local MLS sets its own rules of participation.⁴³ Some MLSs are affiliated with the NAR, which sets forth certain rules and regulations, as well as optional policies, for MLSs.⁴⁴ Each NAR-affiliated MLS has its own set of rules and regulations, which include the mandatory and enacted optional NAR rules.⁴⁵ A participant broker in an MLS enters into a series of standard form contracts incorporating MLS rules and regulations.⁴⁶

³⁸ <https://www.realtor.com/advice/sell/real-estate-commission-explained/> (accessed April 5, 2021).

³⁹ <https://www.realtor.com/advice/sell/real-estate-commission-explained/> (accessed April 5, 2021); Levitt, Steven D., and Chad Syverson, 2008, "Market Distortions When Agents Are Better Informed: The Value of Information in Real Estate Transactions," *The Review of Economics and Statistics*, Vol. 90, No. 4, 599-611 ("Levitt and Syverson (2008)"), at p. 600.

⁴⁰ <https://www.realtor.com/advice/sell/real-estate-commission-explained/> (accessed April 5, 2021); Levitt and Syverson (2008), at p. 600.

⁴¹ <https://www.realtor.com/advice/sell/real-estate-commission-explained/> (accessed April 5, 2021); Levitt and Syverson (2008), at p. 600.

⁴² <https://corporatefinanceinstitute.com/resources/knowledge/other/multiple-listing-service-mls/> (accessed April 9, 2021).

⁴³ <https://www.reso.org/mls-faq/> (accessed April 1, 2021).

⁴⁴ See NAR 2021 Handbook.

⁴⁵ <https://www.reso.org/mls-faq/> (accessed April 1, 2021); NAR 2021 Handbook.

⁴⁶ See, e.g., <https://www.nar.realtor/legal/managing-listing-content/participation-agreement> (accessed April 23, 2021).

29. With increasing use of the Internet, the NAR developed the IDX, which gives MLS participants the ability to authorize limited electronic display of their listings by other MLS participants.⁴⁷ Today, most MLS participants obtain their listing data through IDX data feeds, which allows them to establish a data connection with each individual MLS, import listings, and display those listings on their websites.⁴⁸ MLSs that are not affiliated with the NAR can also use IDX data feeds, and can, but are not required to, establish IDX policies.⁴⁹

2. *Other Services that Facilitate Real Estate Transactions*

30. In addition to core agent and broker services, buyers and sellers of residential real estate, along with agents and brokers themselves, use a variety of other services to facilitate real estate transactions. For example, sellers and/or brokers and agents working with them can use home photography services and home staging services to better market homes.⁵⁰ Potential buyers and sellers and/or broker and agents working with them can use legal services to obtain legal guidance and/or assist with executing agreements, and buyers can use mortgage lending services to facilitate the financing of home purchases.⁵¹
31. In addition, potential home sellers and buyers as well as their agents and brokers use services offered by aggregators, such as Zillow, Redfin, Realtor.com, and others. Such firms collect,

⁴⁷ <https://www.nar.realtor/about-nar/policies/internet-data-exchange-idx/internet-data-exchange-idx-background-and-faq> (accessed April 1, 2021).

⁴⁸ <https://placester.com/real-estate-marketing-academy/what-is-idx-explanation-beginner-agent> (accessed April 27, 2021).

⁴⁹ See Declaration of Matt Hendricks (Senior Director of Brokerage Operations at Zillow Group), April 28, 2021 (“Hendricks Declaration”), at p. 6.

⁵⁰ See <https://www.adamlowecreative.com/why-realtors-should-hire-a-professional-real-estate-photographer/> (accessed April 8, 2021); National Association of Realtors, “2019 Profile of Home Staging,” March 2019, available at <https://www.nar.realtor/sites/default/files/documents/2019-profile-of-home-staging-03-14-2019.pdf>, at PDF pp. 3-4.

⁵¹ See, e.g., <https://www.adamlowecreative.com/why-realtors-should-hire-a-professional-real-estate-photographer/> (accessed April 8, 2021); National Association of Realtors, “2019 Profile of Home Staging,” March 2019, available at <https://www.nar.realtor/sites/default/files/documents/2019-profile-of-home-staging-03-14-2019.pdf>, at PDF pp. 3-4; <https://trspencer.com/blog/why-realtors-need-a-real-estate-attorney> (accessed April 8, 2021); <https://www.quickenloans.com/blog/8-best-real-estate-resources-agents-looking-leg> (accessed April 8, 2021); <https://movement.com/blog/2020/07/30/realtor-work-loan-officer/> (accessed April 8, 2021).

aggregate, and display information on homes, including homes that are currently for sale.⁵² Potential home buyers use these aggregator websites to research homes and neighborhoods, as well as collect information on the home buying process. Potential home sellers can use these websites to research prices of comparable homes and collect information on the home selling process. Agents and brokers use certain aggregator websites to, among other things, promote themselves to potential customers (*i.e.*, home sellers and home buyers) and compete for business.⁵³

3. *Alternative / Nontraditional Brokerage Services*

32. In recent years, several alternative business models of brokerage services have emerged that are, in certain aspects, different from the traditional brokerage services discussed above. Nontraditional brokerage services typically are characterized by charging lower commissions and/or offering different commission structures than traditional brokerage services, and often do not offer all of the services that traditional agents and brokers do. Industry commentary sometimes refers to this type of business model as the “limited-service” model.⁵⁴ This model can differ from the traditional model in several dimensions. For example, limited-service agents or brokers may not accept or present buyer offers to home sellers, advise sellers on the merits of offers, assist sellers with counter-offers, or negotiate on the sellers’ behalf.⁵⁵ Some limited-service agents do not provide MLS listings.⁵⁶
33. Nontraditional brokers also may market lower commissions to home sellers by changing the employment relationship between brokers and agents. One example of such “discount” brokers is Redfin.⁵⁷ Unlike traditional brokerage services, where agents typically are independent contractors

⁵² <https://medium.com/yalantis-mobile/what-technology-stack-do-zillow-redfin-and-realtor-com-use-for-property-listings-b6b1ba695618> (accessed April 8, 2021).

⁵³ <https://medium.com/yalantis-mobile/what-technology-stack-do-zillow-redfin-and-realtor-com-use-for-property-listings-b6b1ba695618> (accessed April 8, 2021).

⁵⁴ <https://listwithclever.com/real-estate-blog/what-is-a-limited-service-real-estate-agent/> (accessed April 5, 2021); <https://lakecountryflatfee.com/limited-service-vs-full-service/> (accessed April 5, 2021).

⁵⁵ <https://listwithclever.com/real-estate-blog/what-is-a-limited-service-real-estate-agent/> (accessed April 5, 2021).

⁵⁶ <https://lakecountryflatfee.com/limited-service-vs-full-service/> (accessed April 5, 2021).

⁵⁷ <https://realestate.usnews.com/real-estate/articles/not-finding-a-real-estate-agent-you-like-consider-a-nontraditional-brokerage> (accessed April 5, 2021); <https://www.realestatewitch.com/redfin-reviews-and-competitors/> (accessed April 5, 2021); <https://insights.daffodilsw.com/blog/how-redfin-works-business-models-and-revenue-streams> (accessed April 27, 2021).

of brokers and pay a portion of their commissions to the brokers that they work for, Redfin hires agents as its own employees.⁵⁸ According to Redfin, for houses sold through a Redfin seller's agent, the commission for the seller's agent (*i.e.*, the Redfin agent) ranges from 1 percent to 1.5 percent of the final sales price, in comparison with the seller's agent's commission of approximately 3 percent in traditional brokerage services.⁵⁹ Industry commentary has described Redfin's business model as "rel[ying] on offering steep discounts to attract a higher volume of customers, and then offsetting those low prices" by, among others, "handling more customers per agent," "charging minimum fees for lower-priced properties," and "upselling current customers on add-on services and premium support."⁶⁰

34. In addition, some firms have begun offering an alternative model of selling residential properties, known as "iBuying." iBuyers are companies that use automated valuation models and other technology to make cash offers on homes quickly, often without seeing the home in person.⁶¹ An iBuyer typically purchases homes in as-is condition, makes any necessary repairs, lists and shows the home, and ultimately sells the home to another homebuyer. iBuyers can generally be thought of as offering a bundled service that covers the activities necessary to sell the home to another buyer, including repair work, home staging, and brokerage services, among other things. Some iBuyers also offer adjacent services to the home seller, such as title, insurance, closing services, and financing to streamline the seller's next purchase.⁶² iBuyers promote their business model as offering customers an opportunity for a simpler, more convenient, and more certain real estate

⁵⁸ <https://realestate.usnews.com/real-estate/articles/not-finding-a-real-estate-agent-you-like-consider-a-nontraditional-brokerage> (accessed April 5, 2021).

⁵⁹ <https://insights.daffodilsw.com/blog/how-redfin-works-business-models-and-revenue-streams> (accessed April 27, 2021); <https://www.redfin.com/why-redfin-how-you-save> (accessed April 5, 2021).

⁶⁰ <https://www.realestatewitch.com/redfin-reviews-and-competitors/> (accessed April 5, 2021).

⁶¹ <https://www.zillow.com/sellers-guide/what-is-an-ibuyer/> (accessed April 7, 2021).

⁶² *See, e.g.*, <https://www.opendoor.com/w/guides/what-is-an-ibuyer> (accessed April 15, 2021); <https://www.zillow.com/sellers-guide/what-is-an-ibuyer/> (accessed April 7, 2021).

transaction relative to traditional home sales.⁶³ Several firms currently offer iBuying programs, including Opendoor, Offerpad, Zillow (through Zillow Offers), and Redfin (through RedfinNow).⁶⁴

B. Relevant Parties

1. National Association of Realtors

35. The NAR is a trade association composed of approximately 1.4 million residential and commercial brokers, salespeople, property managers, appraisers, counselors, and other participants in the real estate industry.⁶⁵ To become a member of the NAR, participants must hold a valid real estate license, be a member of a local real estate association, and pay an annual membership fee.⁶⁶
36. NAR members participate in local MLSs, which enable real estate professionals to share local property listings and related information through a collection of private databases.⁶⁷ Real estate professionals must agree to abide by the MLS's rules of participation in order to access, or add listings in, the MLS's database.⁶⁸ Brokers earn commissions from the sale of properties they list as seller's agents and properties they help sell as a buyer's agent.⁶⁹ According to the NAR, sellers who use agents who participate in MLSs benefit from increased exposure to their property, and buyers benefit from access to timely, accurate information about all MLS-listed properties while

⁶³ See <https://www.opendoor.com/w/guides/what-is-an-ibuyer> (accessed April 15, 2021); <https://www.zillow.com/offers/> (accessed April 12, 2021); <https://www.redfin.com/now> (accessed April 15, 2021).

⁶⁴ <https://www.thebalance.com/how-ibuyers-are-changing-the-real-estate-market-4586536> (accessed April 15, 2021); <https://www.redfin.com/now> (accessed April 15, 2021).

⁶⁵ <https://www.nar.realtor/about-nar> (accessed April 1, 2021).

⁶⁶ <https://www.nar.realtor/membership/how-to-join-nar> (accessed April 1, 2021); <https://www.nar.realtor/membership/dues-information> (accessed April 1, 2021).

⁶⁷ <https://www.nar.realtor/mls-online-listings> (accessed April 1, 2021); <https://home.howstuffworks.com/real-estate/selling-home/multiple-listing-services.htm> (accessed April 1, 2021).

⁶⁸ <https://www.nar.realtor/mls-online-listings> (accessed April 1, 2021); <https://home.howstuffworks.com/real-estate/selling-home/multiple-listing-services.htm> (accessed April 1, 2021).

⁶⁹ <https://home.howstuffworks.com/real-estate/selling-home/multiple-listing-services.htm> (accessed April 1, 2021).

working with only one broker.⁷⁰ As of early 2021, there were more than 500 MLSs covering different local marketplaces across the United States.⁷¹

37. MLSs have adopted IDX programs as a means of sharing information online.⁷² IDX encompasses the rules, systems, and software that allow real estate brokers and agents to share each other's listings, and is the tool used by real estate professionals to add MLS listings to their website.⁷³ IDX gives MLS participants the ability to authorize limited electronic display of their listings by other MLS participants.⁷⁴
38. Participating brokers in an MLS must abide by the MLS's rules. MLSs that are affiliated with the NAR are governed by certain mandatory overarching policies set by the NAR, including requirements relating to the accuracy of listing data, the confidentiality of MLS/IDX information, and the disclosure of compensation offered by the listing broker to other MLS participants representing a buyer.⁷⁵ The NAR also sets forth a number of additional policies that are recommended or optional, such as policies governing the display of expired or sold listings and the identification of the listing agent.⁷⁶ Individual MLSs can choose whether or not to adopt these recommended NAR policies as part of setting their own local rules.⁷⁷ The NAR's rules and policies governing use of the IDX data have been revised several times since their introduction, as approved by the NAR Board of Directors.⁷⁸

⁷⁰ <https://www.nar.realtor/nar-doj-settlement/multiple-listing-service-mls-what-is-it> (accessed April 1, 2021).

⁷¹ <https://www.reso.org/mls-faq/> (accessed April 1, 2021). *See also*, Samuelson Declaration, at p. 8.

⁷² <https://www.nar.realtor/mls-online-listings> (accessed April 1, 2021).

⁷³ <https://blog.hubspot.com/sales/idx> (accessed April 1, 2021).

⁷⁴ <https://www.nar.realtor/about-nar/policies/internet-data-exchange-idx/internet-data-exchange-idx-background-and-faq> (accessed April 1, 2021).

⁷⁵ <https://www.reso.org/mls-faq/> (accessed April 1, 2021); NAR 2021 Handbook, at pp. 24-25, 37-38, 61, 74.

⁷⁶ NAR 2021 Handbook, at pp. 85-86.

⁷⁷ <https://www.reso.org/mls-faq/> (accessed April 1, 2021).

⁷⁸ <https://www.nar.realtor/about-nar/policies/internet-data-exchange-idx/2018-revisions-to-idx-policy> (accessed April 14, 2021).

39. One optional NAR policy is the No Comingling Policy, which, as I described above, requires that MLS participants separate listings obtained through IDX feeds from listings obtained through other sources:

Listings obtained through IDX feeds from Realtor® Association MLSs where the MLS participant holds participatory rights must be displayed separately from listings obtained from other sources. Listings obtained from other sources (e.g., from other MLSs, from non-participating brokers, etc.) must display the source from which each such listing was obtained.⁷⁹

40. The fact that the NAR made the No Comingling Policy optional suggests that it was intended to address local dynamics in each geographic area, which may vary across areas. According to Errol Samuelson, Chief Industry Development Officer at Zillow Group, approximately two-thirds of MLSs have adopted this policy, whereas the remaining one-third allow participants to display listings from all sources together.⁸⁰

2. Zillow

41. Zillow was founded in 2004, and is headquartered in Seattle, Washington.⁸¹ In February 2006, Zillow launched the first iteration of its Zillow.com website, a consumer-facing website that aggregates and displays information on residential real estate properties and provides free valuation estimates (branded as “Zestimates”) based on a proprietary algorithm.⁸² As described by Zillow, it designed Zillow.com to: “empower people with knowledge and information and make it radically easier for people to move.”⁸³ Between 2012 and 2015, Zillow acquired HotPads (an aggregator website largely focused on rental listings),⁸⁴ StreetEasy (an aggregator website for-sale and for-rent

⁷⁹ NAR 2021 Handbook, at p. 86 (Section 18.3.11).

⁸⁰ Samuelson Declaration, at p. 23. Estimate is based on Zillow analysis of MLSs with which Zillow has contracts. *See also*, Hendricks Declaration, at p. 7.

⁸¹ <https://www.zillowgroup.com/facts-figures/> (accessed April 2, 2021).

⁸² Zillow Group, Inc. SEC Form 10-K for the fiscal year ended December 31, 2020, at p. 73; <http://zillow.mediaroom.com/2006-02-08-Zillow-com-Launches-Beta-Real-Estate-Site-Valuations-and-Data-on-More-Than-60-Million-Homes-in-America-for-Free> (accessed April 11, 2021).

⁸³ <https://www.zillowgroup.com/about-us/story/> (accessed April 27, 2021).

⁸⁴ <https://techcrunch.com/2012/11/26/zillow-acquires-rental-and-real-estate-search-site-hotpads-for-16-million-to-grow-its-rental-marketplace/> (accessed April 10, 2021).

listings in New York City),⁸⁵ and Trulia (another aggregator website).⁸⁶ Zillow continues to operate these aggregator sites, in addition to Zillow.com, under separate branding.⁸⁷ Zillow.com shows listings from individual agents and brokers, MLSs, and builders, as well as “for sale by owner” listings, auction listings, pre-foreclosure and foreclosure listings, and “coming soon” listings.⁸⁸

42. Zillow’s websites received more than 9.6 billion visits in 2020 and had an average of 200.7 million unique visitors per month in October through December 2020.⁸⁹ Zillow’s internal research from late 2018 suggests that many website visitors are engaged in the buying or selling process: approximately 40 percent of Zillow’s and Trulia’s unique visitors are planning to buy or sell a home in the next 12 months.⁹⁰ According to research conducted by Zillow in 2019, approximately 84 percent of homebuyers use an online resource, such as Zillow’s websites, at some point in their search for a home to buy.⁹¹
43. Zillow’s primary business and source of income is the sale of advertising services, as well as marketing and technology products and services, to real estate agents and brokers.⁹² Much of Zillow’s advertising revenue is generated through its Premier Agent and Premier Broker programs, which provide advertising services and other marketing products, such as customer relationship management tools, that help real estate agents and brokers manage and expand their businesses.⁹³

⁸⁵ <https://www.forbes.com/sites/kellyclay/2013/08/19/zillow-acquires-nyc-real-estate-site-streeteasy-for-50m-plans-stock-offer/?sh=15b37d64746e> (accessed April 10, 2021).

⁸⁶ <http://zillow.mediaroom.com/2014-07-28-Zillow-Announces-Acquisition-of-Trulia-for-3-5-Billion-in-Stock> (accessed April 27, 2021).

⁸⁷ <https://www.zillowgroup.com/about-us/business/> (accessed April 10, 2021).

⁸⁸ Samuelson Declaration, at pp. 10-11.

⁸⁹ Zillow Group, Inc. SEC Form 10-K for the fiscal year ended December 31, 2020, at pp. 43-44.

⁹⁰ <https://www.zillow.com/lender-resources/training/getting-started-with-zillow-group/getting-started-with-zillow-group-mortgages/> (accessed April 11, 2021).

⁹¹ <https://www.zillow.com/report/2019/buying-a-home-in-america/home-buyers-key-facts-figures/> (accessed April 11, 2021).

⁹² Zillow also sells advertising services to providers of other adjacent products. Zillow Group, Inc. SEC Form 10-K for the fiscal year ended December 31, 2020, at p. 41. As noted below, Zillow’s Internet, Media, and Technology segment, which primarily includes Zillow’s sale of advertising, marketing, and technology services, accounted for all of Zillow’s net operating income in 2020.

⁹³ Zillow Group, Inc. SEC Form 10-K for the fiscal year ended December 31, 2020, at pp. 40-41. *See also*, <https://theclose.com/zillow-premier-agent-worth-cost/> (accessed April 6, 2021); <https://premieragent.zillow.com/solutions/real-estate-agent-b/> (accessed April 6, 2021). Zillow’s Premier Agent

In addition, Zillow offers a Broker Boost program through which Zillow charges a fee to allow brokers to have a listing or advertisement highlighted alongside results when users search for properties.⁹⁴ This advertising is targeted to consumers browsing Zillow's websites, including those consumers interested in purchasing and/or selling a home who may desire brokerage services.⁹⁵ As such, the success and profitability of Zillow's advertising business depends on its ability to attract consumers to its websites by offering a valuable service: useful and transparent real estate information.

44. In recent years, Zillow has begun expanding into facilitating real estate transactions and offering related adjacent services.⁹⁶ In April 2018, Zillow launched Zillow Offers, a version of iBuying through which Zillow purchases homes directly from sellers, prepares those homes for resale, and then resells them to other buyers.⁹⁷ For sellers requesting an offer through Zillow Offers, Zillow uses data about the home and local market conditions to make a cash offer based on the estimated market value of the home,⁹⁸ minus the expected costs of any repairs necessary to get the home ready to list.⁹⁹ As described on the company website, Zillow charges selling costs of 6 percent to cover the transaction costs of buying and selling the home (including the buyer's agent commission), closing costs of 1 to 2 percent, and a service fee of 2.5 percent on average to cover the cost of home ownership before resale and potential risks associated with the sale.¹⁰⁰ According to the company website, sellers benefit from enhanced convenience by transacting with Zillow Offers: sellers can choose a closing date and move-out date at their convenience and can avoid repairs necessary to

program generated \$1.0 billion in revenues in 2020, accounting for roughly 72 percent of total revenues for the Internet, Media, and Technology segment. Zillow Group, Inc. SEC Form 10-K for the fiscal year ended December 31, 2020, at pp. 41, 44.

⁹⁴ Samuelson Declaration, at p. 5.

⁹⁵ See <https://www.zillow.com/premier-agent/> (accessed April 27, 2021).

⁹⁶ Zillow Group, Inc. SEC Form 10-K for the fiscal year ended December 31, 2020, at pp. 3, 40, 44-45.

⁹⁷ Zillow Group, Inc. SEC Form 10-K for the fiscal year ended December 31, 2020, at p. 4.

⁹⁸ If the seller accepts Zillow's offer, Zillow will schedule an in-person evaluation of the home, which may result in adjustments to the initial offer. <https://www.zillow.com/offers/> (accessed April 12, 2021).

⁹⁹ Zillow performs the repairs and prep work necessary to get the home ready to list, but does not flip homes by looking for distressed homes or conducting major remodels. <https://www.zillow.com/offers/> (accessed April 12, 2021); <https://www.zillow.com/z/offers/faq/> (accessed April 7, 2021). See also, Zillow Group Inc. Q1 2018 Earnings Call Transcript, May 7, 2018, at pp. 8-9.

¹⁰⁰ The service fee varies for each property. <https://www.zillow.com/offers/> (accessed April 12, 2021).

list their home.¹⁰¹ Zillow Offers currently operates in 25 locations in the United States.¹⁰² In 2020, Zillow Offers accounted for \$1.7 billion in revenues from the sale of 5,337 homes.¹⁰³

45. In 2018 and 2019, Zillow also expanded into offering adjacent services to support Zillow Offers transactions, including mortgages through Zillow Homes Loans¹⁰⁴ and title and escrow services through Zillow Closing Services.¹⁰⁵ In early 2021, Zillow launched a licensed brokerage entity, Zillow Homes, to further simplify the transaction experience for Zillow Offers customers.¹⁰⁶ Zillow Homes provides brokerage services only to Zillow and to customers who sell their homes to Zillow through Zillow Offers.¹⁰⁷ Zillow Homes currently operates in three Zillow Offers locations (Atlanta, Phoenix, and Tucson), though Zillow expects to expand these services to additional Zillow Offers locations later in 2021.¹⁰⁸
46. Zillow organizes its operations into three reportable segments: Internet, Media & Technology (“IMT”); Homes; and Mortgages.¹⁰⁹ In 2020, the IMT segment, which includes Zillow’s Premier Agent program and the sale of other advertising and business technology solutions to real estate

¹⁰¹ <https://www.zillow.com/offers/> (accessed April 12, 2021).

¹⁰² <https://www.zillow.com/z/offers/faq/> (accessed April 7, 2021).

¹⁰³ Zillow Group, Inc. SEC Form 10-K for the fiscal year ended December 31, 2020, at pp. 4, 41.

¹⁰⁴ Zillow acquired Mortgage Lenders of America in October 2018, which it rebranded as Zillow Home Loans in April 2019. Customers buying or selling homes through Zillow Offers can secure financing directly from Zillow Home Loans. Zillow Home Loans is available to consumers more broadly and is not restricted to Zillow Offers transactions. *See* <https://www.prnewswire.com/news-releases/zillow-group-launches-zillow-home-loans-to-support-zillow-offers-300822511.html> (accessed April 27, 2021); <https://www.zillowgroup.com/about-us/business/> (accessed April 10, 2021).

¹⁰⁵ Zillow launched Zillow Closing Services in the second half of 2019. Zillow Closing Services offers title and escrow services to home buyers and sellers, including title search procedures for title insurance policies, escrow and other closing services. Zillow Closing Services is also available to consumers outside of Zillow Offers transactions. Zillow Group, Inc. SEC Form 10-K for the fiscal year ended December 31, 2020, at pp. 40, 80; <https://www.zillowclosings.com/> (accessed April 13, 2021).

¹⁰⁶ <https://www.zillowgroup.com/streamliningzillow-industry/> (accessed April 2, 2021).

¹⁰⁷ <https://www.zillowgroup.com/streamliningzillow-industry/> (accessed April 2, 2021). In addition, Zillow provides listing services for new construction homes through a separate entity, Zillow Listing Services. *See* <https://www.zillow.com/resources/new-construction/introducing-listing-connect/> (accessed April 20, 2021).

¹⁰⁸ <https://www.zillowgroup.com/streamliningzillow-industry/> (accessed April 2, 2021); <http://zillow.mediaroom.com/2020-09-23-Zillow-Offers-Will-Expand-Services-in-2021-to-Simplify-Customer-Transactions> (accessed April 7, 2021).

¹⁰⁹ Zillow Group, Inc. SEC Form 10-K for the fiscal year ended December 31, 2020, at p. 40.

professionals, generated approximately \$1.5 billion in revenues and net operating profits of \$263.0 million.¹¹⁰ The Homes segment, which includes Zillow Offers and Zillow Closing Services, generated approximately \$1.7 billion in revenues and net operating losses of approximately \$320.3 million in 2020.¹¹¹ The Mortgages segment, which includes the results of Zillow Home Loans and advertising sold to mortgage lenders and other mortgage professionals, accounted for total revenues of approximately \$174.2 million and net operating profits of \$4.5 million.¹¹²

47. In September 2020, Zillow announced it was becoming a participant in the NAR and MLSs across the country and would begin receiving listing data through IDX data feeds.¹¹³ I discuss Zillow's motivation for becoming a participant in the NAR and affiliated MLSs, and how this shift benefits Zillow and consumers, in subsequent sections in my report.

3. REX

48. Founded in 2015, REX is a real estate brokerage firm. According to REX, unlike traditional brokerage firms, REX uses artificial intelligence and targeted digital marketing campaigns to publicize seller homes to potential buyers without listing on the MLS.¹¹⁴ Instead, REX emphasizes that REX properties appear on Google, Zillow, Trulia, Yahoo, and other sites where homebuyers might search, and that REX technology targets potential buyers based on their geography, demographics, preferences, and online behaviors.¹¹⁵ REX advertises that its business model can reduce commission costs, claiming: "REX covers both sides of the transaction with a total seller fee as low as 2%, instead of the 5-6% traditional agents charge."¹¹⁶ According to REX, total commissions paid on REX facilitated home sales average 3.3 percent of a home's selling price.¹¹⁷

¹¹⁰ Zillow Group, Inc. SEC Form 10-K for the fiscal year ended December 31, 2020, at pp. 40, 44-45.

¹¹¹ Zillow Group, Inc. SEC Form 10-K for the fiscal year ended December 31, 2020, at pp. 44-45.

¹¹² Zillow Group, Inc. SEC Form 10-K for the fiscal year ended December 31, 2020, at pp. 41, 44-45.

¹¹³ <https://www.zillow.com/agent-resources/blog/creating-a-better-real-estate-experience/> (accessed April 1, 2021); <https://www.zillow.com/agent-resources/blog/new-look-for-agents/> (accessed April 6, 2021).

¹¹⁴ <https://www.rexhomes.com/marketing-rex> (accessed April 1, 2021).

¹¹⁵ <https://www.rexhomes.com/faq/buyer> (accessed April 1, 2021); <https://blog.rexhomes.com/marketing-homes/> (accessed April 30, 2021).

¹¹⁶ <https://www.rexhomes.com/about> (accessed April 1, 2021).

¹¹⁷ Declaration of Jack Ryan (REX Co-founder and CEO), March 8, 2021, at p. 4.

REX claims that its business model enables savings for homebuyers using REX (instead of a traditional agent) because the house “can be priced lower and still net the seller more money.”¹¹⁸

49. REX advertises that it: “does everything a traditional agent does and more.”¹¹⁹ For sellers, the REX relationship manager will price the home, place it on the market, manage offers, negotiate on the seller’s behalf, and handle all paperwork.¹²⁰ For buyers, the REX relationship manager will help schedule showings, submit offers, negotiate on the buyer’s behalf, manage inspections and escrow and closing.¹²¹ REX promotes that its agents are salaried employees, which REX claims: “incentivize[s] [them] to satisfy customers rather than to just close transactions in pursuit of a fast commission.”¹²² In addition to brokerage services, REX also provides adjacent services related to mortgages, escrow, title insurance, and home insurance.¹²³
50. REX’s business model shares some similarities with that of discount brokerages, such as Redfin. For example, Redfin also markets itself as a full service brokerage that provides all of the services of a traditional agent at lower fees.¹²⁴ Redfin agents are also salaried employees, as opposed to working solely on commission.¹²⁵ Similar to REX, Redfin also engages in targeted marketing campaigns to connect with customers and recommend relevant new listings.¹²⁶
51. I have seen limited industry commentary and consumer reviews regarding REX’s business. Some customers report being satisfied with REX’s service, and highlight positive aspects of the experience such as commission savings, an easy transaction process, and a helpful and professional

¹¹⁸ <https://www.rexhomes.com/faq/buyer> (accessed April 1, 2021). Alternatively, if the buyer decides to purchase a non-REX home, REX claims that it splits the commission it makes on the transaction with the purchaser. <https://www.rexhomes.com/faq/buyer> (accessed April 1, 2021).

¹¹⁹ <https://www.rexhomes.com/faq/general> (accessed April 26, 2021).

¹²⁰ <https://www.rexhomes.com/> (accessed April 1, 2021), movie clip at 0.56.

¹²¹ <https://www.rexhomes.com/> (accessed April 1, 2021), movie clip at 1.06.

¹²² <https://www.rexhomes.com/about> (accessed April 1, 2021); Complaint, at p. 14.

¹²³ <https://www.rexhomes.com/> (accessed April 1, 2021); <https://cdn.rexhomes.com/assets/docs/a-vision-for-the-future-of-the-residential-real-estate-business.pdf> (accessed April 1, 2021).

¹²⁴ See <https://press.redfin.com/faq> (accessed April 26, 2021).

¹²⁵ <https://www.redfin.com/news/how-much-do-redfin-agents-earn/> (accessed April 26, 2021).

¹²⁶ See <https://blog.roof.ai/redfin/> (accessed April 26, 2021).

REX team.¹²⁷ Other consumer reviews and third-party commentary suggest skepticism of REX's business model and dissatisfaction with its service. For example, an October 2020 review of REX by Clever, a firm that describes itself as "an online referral service that pre-negotiates discounted rates and rebates with top-rated, local real estate agents for home sellers and buyers,"¹²⁸ noted that REX's advertised commissions savings are overstated and that the quality of REX's brokerage services can be lower than traditional brokerage services.¹²⁹ Clever pointed to, among other things, user reviews on Zillow, Google, and Facebook, some of which discussed drawbacks to REX's service such as inexperienced agents, poor communication and organization, and undervalued properties.¹³⁰

52. REX currently operates in 19 states across the United States.¹³¹ According to REX's co-founder and Chief Executive Officer, Jack Ryan, REX's business has grown from approximately 4 transactions in 2015 to over 1,400 transactions in 2020.¹³² In comparison, approximately 6.5 million homes were sold in the United States in 2020,¹³³ suggesting REX accounted for approximately 0.02 percent of U.S. home sales in that year. In 2020, REX generated \$11.4 million in revenues from commissions on home sales, accounting for approximately 0.01 percent of estimated annual U.S.

¹²⁷ <https://web.archive.org/web/20201017154040/https://listwithclever.com/real-estate-blog/rex-real-estate/> (accessed April 24, 2021).

¹²⁸ <https://listwithclever.com/real-estate-faqs/> (accessed April 28, 2021).

¹²⁹ <https://web.archive.org/web/20201017154040/https://listwithclever.com/real-estate-blog/rex-real-estate/> (accessed April 24, 2021).

¹³⁰ <https://web.archive.org/web/20201017154040/https://listwithclever.com/real-estate-blog/rex-real-estate/> (accessed April 24, 2021). For example, Clever pointed to a Google review from a buyer's agent that described the buyer agent's experience as a counterparty on a deal with a sell-side REX agent who was described as knowing "nothing about the house and...providing a poor experience for both parties." The buyer agent also questioned REX's claim that they reduce commissions for their clients, noting that in the buyer agent's experience the seller paid the buyer agents "full commission."

¹³¹ Specifically, REX operates in Arizona, California, Colorado, District of Columbia, Florida, Georgia, Illinois, Maryland, Massachusetts, Nevada, New York, New Jersey, North Carolina, Oregon, Pennsylvania, Texas, Utah, Virginia and Washington. <https://www.rexhomes.com/about> (accessed April 1, 2021).

¹³² Declaration of Jack Ryan (REX Co-founder and CEO), March 8, 2021, at p. 4.

¹³³ Zillow Group, Inc. SEC Form 10-K for the fiscal year ended December 31, 2020, at p. 6.

real estate commissions.¹³⁴ REX claims that it has saved consumers \$28.7 million in real estate brokerage commissions in its five years of operations from 2015 to 2020.¹³⁵

53. As of April 8, 2021, REX had 426 active listings on its website, equivalent to less than 0.1 percent of the 595,379 active listings on Zillow as of the week of March 27, 2021, the most recent time period for which I have seen data.¹³⁶ REX groups its listings into 40 cities or locations on its website. As shown on Exhibit 1, REX's top locations in terms of current active listings include New York, Los Angeles and Orange County, Philadelphia, New Jersey, and the San Francisco Bay Area, among other locations. Even within REX's top locations in terms of current active listings, REX's numbers are equivalent to approximately 0.1 percent to 1.1 percent of active listings on Zillow.¹³⁷ Approximately half of REX's locations currently have 10 or fewer active listings.¹³⁸

V. ZILLOW'S PARTICIPATION IN LOCAL MLSs

54. As I noted above, in September 2020, Zillow announced that: “[w]ith the expansion of Zillow Offers services, we are also simplifying the way we receive listing data by becoming participants in MLSs across the country.”¹³⁹ Prior to this change, Zillow obtained its listings for Zillow.com and its Mobile Apps from individual brokerages; franchisors such as RE/MAX; and syndication agreements with individual MLSs.¹⁴⁰ As a participant in local MLSs, Zillow began obtaining MLS listings directly from IDX data feeds in January 2021.¹⁴¹
55. In order to comply with the No Comingling Policy enacted by approximately two-thirds of MLSs, Zillow changed its website design nationwide to separately display MLS listings and non-MLS

¹³⁴ Calculated as \$11.4 million ÷ \$100 billion = 0.00011. Majure Report, at pp. 13-14 and Exhibit 2.

¹³⁵ Declaration of Jack Ryan (REX Co-founder and CEO), March 8, 2021, at p. 4.

¹³⁶ Exhibits 1-2. Zillow active listings represent the four-week trailing average weekly count of active listings as of March 27, 2021, the latest week of data available from Zillow.

¹³⁷ Exhibit 2.

¹³⁸ Exhibit 1.

¹³⁹ <https://www.zillow.com/agent-resources/blog/creating-a-better-real-estate-experience/> (accessed April 1, 2021).

¹⁴⁰ Samuelson Declaration, at pp. 10-12.

¹⁴¹ <https://www.zillow.com/agent-resources/blog/new-look-for-agents/> (accessed April 6, 2021).

listings in two different tabs on the same web page.¹⁴² As described by Teresa Thomas, Product Manager for the Search Experience Team at Zillow Group, Zillow internally studied how best to display home listing across locations, including locations that used data acquired from MLSs that did not require a No Comingling Policy.¹⁴³ My understanding is that Zillow ultimately made a unilateral choice that it should separate MLS and non-MLS listings across its entire listing base—as opposed to switching between a single tab display and a two tab display—because it led to a superior user experience, and was technically easier and less costly.¹⁴⁴ According to Zillow’s Ms. Thomas, Zillow was concerned that implementing a solution that would involve a single tab in only certain geographies likely would create confusion among consumers.¹⁴⁵ For example, Zillow’s website provides users with the ability to zoom in and out and navigate around the map, which could result in multiple MLSs, which may differ in terms of whether or not they have enacted the No Comingling Policy, appearing in the same map view. As a result, the website display could switch from a single tab to a dual-tab layout as the user navigates around the map, which would be jarring and confusing to the user.¹⁴⁶ In addition, Ms. Thomas described that it would have been technically cumbersome, time consuming, and costly for Zillow to try to create a front end display that would be able to deliver results with either a single tab or a dual-tab layout based on geography, and would seamlessly switch between the two layouts as the user moves around on the map.¹⁴⁷

56. My understanding is that Zillow’s decision to join local MLSs, switch to obtaining MLS listings directly from IDX data feeds, and redesign its website was driven by its desire to: (1) improve the quality and coverage of its listing data for its aggregation service, and lower the costs associated with obtaining and managing those data; and (2) ensure its freedom to innovate in its aggregation services and other businesses, such as Zillow Offers, by ensuring its access to listing data.¹⁴⁸ I

¹⁴² Samuelson Declaration, at pp. 21-23; Declaration of Teresa Thomas (Project Manager for the Search Experience Team at Zillow Group), April 28, 2021 (“Thomas Declaration”), at p. 8.

¹⁴³ Thomas Declaration, at pp. 2-3, 6-8.

¹⁴⁴ Thomas Declaration, at pp. 3, 6-11.

¹⁴⁵ Thomas Declaration, at pp. 7-8.

¹⁴⁶ Thomas Declaration, at pp. 7-8.

¹⁴⁷ Thomas Declaration, at pp. 7-8.

¹⁴⁸ Samuelson Declaration, at pp. 12-17.

understand from Errol Samuelson, Chief Industry Development Officer at Zillow Group, that Zillow expected this decision to benefit its business in several ways, including:

- *Improving listing data quality on Zillow aggregation services.* Relative to Zillow's prior arrangements with individual MLSs, IDX data feeds offer superior field completeness, photo quality, and timeliness of feed updates, among other things. In addition, the IDX data have better coverage of active listings compared to the data obtained via Zillow's prior syndication agreements.¹⁴⁹
- *Reducing costs of obtaining listing data.* [REDACTED]
[REDACTED]
[REDACTED]¹⁵⁰
- *Reducing administrative burden of managing listing data.* Obtaining listings directly from IDX data feeds eliminates the need to manage hundreds of contracts with individual MLSs (and thousands of contracts with brokers) to ensure compliance and de-duplicate listings across numerous data feeds.¹⁵¹
- *Ensuring its access to MLS listing data to ensure Zillow's freedom to innovate.* Historically, Zillow's access to MLS listing data depended on numerous individually-negotiated contracts that could be terminated at the discretion of the individual MLSs, [REDACTED]
[REDACTED]¹⁵² I understand there were a number of specific instances in which certain MLSs withdrew, or threatened to withdraw, their listings from Zillow for a period of time.¹⁵³ As a participant in the NAR and MLSs, Zillow is now protected from being cut off from IDX data feeds as long as it adheres to NAR/MLS rules.¹⁵⁴ Zillow's need to secure its access to listing data has become increasingly important as its business model

¹⁴⁹ Samuelson Declaration, at pp. 12-16, 18-19.

¹⁵⁰ Samuelson Declaration, at pp. 19-20.

¹⁵¹ Samuelson Declaration, at p. 14. *See also*, Hendricks Declaration, at pp. 3-4.

¹⁵² Samuelson Declaration, at pp. 16-17; Hendricks Declaration, at p. 3.

¹⁵³ Samuelson Declaration, at p. 16.

¹⁵⁴ Samuelson Declaration, at p. 19.

evolves and it continues to innovate in other areas of the real estate transaction, such as Zillow Homes and Zillow Offers, [REDACTED]

[REDACTED].¹⁵⁵

57. In addition to providing economic benefits to Zillow, which I describe in greater detail below, Zillow's participation in the NAR/MLSs and use of IDX data feeds also benefits *consumers* through higher-quality listing data on Zillow's aggregation services and innovative Zillow offerings that enhance consumer welfare. I discuss the economic value to consumers of the IDX data and Zillow's recent innovations, including its expansion of its Zillow Offers business, in more detail below.

VI. ANALYSIS OF DR. MAJURE'S OPINIONS

A. Zillow is Not a Significant Participant in the Purported Relevant Market for Brokerage Services

58. Dr. Majure opines that, from an antitrust perspective: "[t]he provision of real estate brokerage services to sellers and buyers of residential real property is likely to constitute the relevant product market" and that NAR and its member agents have market power in this market.¹⁵⁶ With respect to Zillow, however, neither REX nor Dr. Majure have alleged that Zillow has a dominant position in the alleged market for brokerage services. To the contrary, Dr. Majure states that: "[t]here is no indication that Zillow individually has power as a participant in the brokerage services market."¹⁵⁷
59. Indeed, Zillow is not a significant participant in the claimed relevant market for the provision of real estate brokerage services. Zillow participates directly in real estate brokerage services only to a limited extent through its Zillow Homes brokerage business, which was launched in early 2021 and provides brokerage services only for Zillow Offers transactions.¹⁵⁸ Zillow Homes currently operates in three locations (Atlanta, Phoenix, and Tucson), and Zillow plans to expand these operations to other Zillow Offers locations in 2021.¹⁵⁹ Zillow Offers operates in 25 locations across

¹⁵⁵ Samuelson Declaration, at p. 17.

¹⁵⁶ Majure Report, at pp. 14, 16.

¹⁵⁷ Majure Report, at p. 18.

¹⁵⁸ <https://www.zillowgroup.com/streamliningzillow-industry/> (accessed April 2, 2021).

¹⁵⁹ <https://www.zillowgroup.com/streamliningzillow-industry/> (accessed April 2, 2021); Samuelson Declaration, at p. 6.

the United States and accounted for less than 0.1 percent of estimated annual U.S. real estate transaction value in 2020.¹⁶⁰

60. To the extent that Zillow participates in real estate brokerage through Zillow Homes, it does not independently compete with other brokers, including REX. Unlike traditional brokerage services, Zillow Homes does not offer brokerage services to buyers or sellers of residential properties except when Zillow Offers is involved in the transaction. Brokerage services by Zillow Homes are provided only to facilitate real estate transactions involving Zillow through its Zillow Offers program.¹⁶¹ As Zillow described in announcing the introduction of Zillow Homes: “We will not be recruiting and hiring agents to be traditional agents (ie, Zillow employees are not signing clients and listing a homeowner’s home). Zillow Homes will only be representing itself when purchasing through Zillow Offers and reselling a Zillow-owned home.”¹⁶²
61. Furthermore, as an iBuyer, commissions represent a *cost* to Zillow that it incurs (and/or passes along to its Zillow Offers’ customers in the form of “selling costs”). As such, Zillow Offers does not have an economic incentive to increase the price of brokerage services. Instead, it has an economic incentive to lower brokerage commissions to reduce the costs of its business and allow it to reduce the selling costs charged to Zillow Offers customers. For example, given that Zillow Homes currently is only available in three locations, Zillow engages outside brokerage firms to act on its behalf in most Zillow Offers locations and pays commissions to those brokers.¹⁶³ In locations where Zillow Homes provides brokerage services to Zillow, the price of brokerage services

¹⁶⁰ <https://www.zillow.com/z/offers/faq/> (accessed April 7, 2021); Zillow Group, Inc. SEC Form 10-K for the fiscal year ended December 31, 2020, at p. 4.

¹⁶¹ <https://www.zillowgroup.com/streamliningzillow-industry/> (accessed April 2, 2021). In addition, Zillow provides listing services for new construction homes through a separate entity, Zillow Listing Services. Zillow describes Zillow Listing Services as: “a publishing solution that allows builders to easily create and maintain listings that appear on both Zillow and the MLS.” See <https://www.zillow.com/resources/new-construction/introducing-listing-connect/> (accessed April 20, 2021).

¹⁶² In the announcement to agents and brokers, Zillow also explained: “Should I be worried that Zillow Offers is my competitor now? No. Zillow Homes will become the broker of record for our Zillow-owned homes — our Zillow Premier Agent business remains largely unchanged. We will still connect potential home sellers and buyers to agents through our Zillow Premier Agent platform, and we expect most customers to prefer the expertise and guidance of a great agent.” <https://www.zillow.com/agent-resources/blog/creating-a-better-real-estate-experience/> (accessed April 1, 2021).

¹⁶³ See Zillow Group Inc. Q1 2018 Earnings Call Transcript, May 7, 2018, at p. 5. Zillow noted that it pays outside brokers “commissions that are locally consistent with what other investor buyers pay at scale.”

engaged by counterparties (*i.e.*, buyers) of Zillow Offers homes represents a cost to Zillow Offers. That is, as is customary practice in the industry, Zillow (the seller) typically pays the commission for the buyer's agent when a homebuyer purchases a Zillow-owned home, reducing the net price Zillow receives for the home. Participating in an alleged cartel to elevate the price of brokerage services, as alleged by REX,¹⁶⁴ would be contrary to Zillow Offers' economic incentives.

62. Dr. Majure claims that, despite Zillow's limited direct participation in the purported market for brokerage services, Zillow has "power to influence the market far beyond its share as an individual participant" because it controls an important input through its service as an online aggregator of available properties.¹⁶⁵ However, Dr. Majure has neither explained the nature of the alleged power nor demonstrated the existence of such power. Even if Zillow did have such power, Dr. Majure has not shown that Zillow, in its role as an aggregator, has an incentive to limit competition among brokerages. As a seller of advertising services to the brokerage industry, and as an economic platform that connects advertisers of real estate related services and individuals who seek real estate information and services, Zillow generally benefits from offering more and higher-quality services to users, including offering advertisements from a range of service providers that might match well with the preferences of some users.¹⁶⁶ And in particular, Zillow does not appear to have an economic incentive for REX, a paying customer of Zillow's Premier Agent and Broker Boost advertising programs,¹⁶⁷ to exit the brokerage services marketplace. To the contrary, Zillow appears to *benefit* from REX's presence, as REX is a paying customer of Zillow's advertising service and expands the range of service providers advertising on Zillow's platform that may appeal to users. In addition, REX listings provide Zillow with content that differentiates it from other aggregation services that do not carry non-MLS listings.

¹⁶⁴ Complaint, at pp. 18-19, 31, 33.

¹⁶⁵ Majure Report, at pp. 5, 13.

¹⁶⁶ See, e.g., Rysman, Marc, 2004, "Competition Between Networks: A Study of the Market for Yellow Pages," *The Review of Economic Studies*, Vol. 71, No. 2, 483-512 ("Rysman (2004)"). See also, Rochet, Jean-Charles, and Jean Tirole, 2003, "Platform Competition in Two-Sided Markets," *Journal of the European Economic Association*, Vol. 1, No. 4, 990-1029 ("Rochet Tirole (2003)"), Armstrong, Mark, 2006, "Competition in Two-Sided Markets," *RAND Journal of Economics*, Vol. 37, No. 3, 668-691 ("Armstrong (2006)").

¹⁶⁷ Samuelson Declaration, at p. 5.

B. Zillow’s Relationship with MLSs Is a Vertical One, and Vertical Restraints Are Not the Type of Conduct that Would Always or Almost Always Tend to Restrict Competition and Decrease Output

63. As I described above, Zillow’s primary business is not in real estate brokerage. Instead, Zillow primarily is a “real estate information marketplace” and a “real estate aggregator[] whose customer buys ads” on Zillow’s sites.¹⁶⁸ As described in its 2020 10-K, Zillow’s business model relies on, among other things, “the breadth [...] of information available” on its websites to attract users (*i.e.*, home buyers and sellers),¹⁶⁹ which in turn, attract advertisers (*i.e.*, agents and brokers) who want to reach Zillow’s users. As I described above in Section V, Zillow switched to using IDX data feeds largely to improve the quality and reduce the cost of listing data, and obtain more secure access to those data, and therefore improve the quality of its core services. From Zillow’s perspective, its relationships with the various MLSs from which it acquires data are vertical relationships, not horizontal relationships, and any limits arising from the MLS’s IDX rules that govern how Zillow must display data are vertical restraints, not the results of horizontal restraints or a horizontal conspiracy. Further, as I described above in Section V, Zillow’s decisions about how to implement changes to its websites to comply with rules adopted by certain MLSs were unilateral decisions.
64. In general, a vertical relationship that improves the quality of a product or service offering, even if it involve some restraints, can be welfare enhancing, and is not the type of conduct that would always or almost always tend to restrict competition and decrease output. Economic and legal scholars have found that various types of vertical restraints can be procompetitive and efficiency-enhancing.¹⁷⁰ For example, it is well known that when downstream firms must make investments in sales efforts, such as advertising, that benefit competing downstream firms, an upstream supplier may help increase advertising effort and output, and improve welfare, by imposing vertical

¹⁶⁸ Zillow, Inc. SEC Form S-1, April 18, 2011, at 1; <https://medium.com/yalantis-mobile/what-technology-stack-do-zillow-redfin-and-realtor-com-use-for-property-listings-b6b1ba695618> (viewed April 8, 2021).

¹⁶⁹ Zillow Group, Inc. SEC Form 10-K for the fiscal year ended December 31, 2020, at p. 6.

¹⁷⁰ Rey, Patrick, 2003, “The Economics of Vertical Restraints,” Chapter 14 in *Economics for an Imperfect World: Essays in Honor of Joseph E. Stiglitz*, (“Rey (2003)”), The MIT Press, at p. 264; Lafontaine, Francine, and Margaret Slade, 2008, “Exclusive Contracts and Vertical Restraints: Empirical Evidence and Public Policy,” Chapter 10 in *Handbook of Antitrust Economics* (“Lafontaine and Slade (2008)”), The MIT Press, at pp. 408-409; O’Brien, Daniel P., 2020, “The Economics of Vertical Restraints in Digital Markets,” in *The GAI Report on the Digital Economy* (“O’Brien (2020)”), at p. 326; Rosch, Thomas J., 2012, “Developments in the Law of Vertical Restraints,” at p. 6; Butz, David A., and Andrew N. Kleit, 2001, “Are Vertical Restraints Pro- or Anticompetitive? Lessons from *Interstate Circuit*,” *Journal of Law and Economics*, Vol. 44, No. 1, 131-160, at p. 131.

restraints, such as exclusive territories, on downstream firms.¹⁷¹ Likewise, economists have found that in cases where an upstream manufacturer optimally invests resources in providing training to salespeople at a downstream firm, it may be welfare enhancing for the upstream and downstream firms to agree to an exclusive dealing arrangement, whereby the downstream firm agrees to exclusively work with just one manufacturer. In particular, but for an exclusive dealing arrangement, an upstream firm, such as a manufacturer, may be unwilling to invest in helping downstream firms such as retailers, if retailers can also use that investment to sell products from rival manufacturers.¹⁷²

C. Dr. Majure’s Analysis Overstates Any Harm to REX and its Customers Stemming from Zillow’s Display Change

65. Dr. Majure argues that Defendants’ conduct has “sharply reduced REX’s ability to compete with NAR members in the market for real estate brokerage services,” which, in turn, harms consumers by depriving them of the opportunity to save on commissions through REX’s business model.¹⁷³ However, Dr. Majure’s analysis suffers from a number of flaws that cause him to overstate the harm to REX and its consumers resulting from Zillow’s display change in accordance with NAR rules.

1. Harm to REX’s Business

66. Dr. Majure claims that, in the weeks following Zillow’s display change, REX experienced a reduction in showing requests from Zillow per REX active listing relative to the same weeks in 2020, an increase in the share of properties with no showing requests in the past 14 days relative to the same weeks in 2020, and an increase in the share of REX properties co-listed on the MLS.¹⁷⁴ Even if Zillow’s display change contributed to the reduction in showings and increase in co-listing behavior claimed by Dr. Majure, Dr. Majure fails to establish that the *entirety* of these effects is attributable to the display change to the exclusion of other factors. Dr. Majure’s analysis fails to address and control for other factors that may have contributed to these trends, including, for example, shifts in REX’s business or marketing strategy or execution from 2020 to 2021, shifts in

¹⁷¹ Cabral, Luis M. B., 2000, *Introduction to Industrial Organization*, The MIT Press, (“Cabral (2000)”), at p. 194.

¹⁷² Cabral (2000), at pp. 196-197.

¹⁷³ Majure Report, at pp. 19, 28.

¹⁷⁴ Majure Report, at pp. 22-24 and Exhibit 4-6.

local conditions for locations in which REX participates, or any other changes to Zillow's online platforms unrelated to the No Comingling Policy.

67. Similarly, Dr. Majure's analysis of the change in views of REX properties on Zillow after co-listing does not address to what extent co-listed properties may be selected for co-listing because they are expected to disproportionately benefit from that treatment.¹⁷⁵ Dr. Majure also does not analyze whether, and to what extent, co-listing has always increased views on Zillow (including prior to the display change).

68. Moreover, Dr. Majure's analysis fails to address the extent to which a reduction in showings and/or views has harmed REX's business. In particular, he has not provided any information regarding the impact on the volume and value of REX transactions since Zillow's display change. Of note, while Dr. Majure has characterized REX as experiencing "rapid growth in revenue from 2015 through 2020,"¹⁷⁶ [REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

Furthermore, Dr. Majure fails to adequately consider options available to REX to mitigate any alleged harm. For example, I understand that REX could co-list its properties on the MLS at very low commission rates of, for example, 2.1 percent (the average buyer's agent commissions for REX transactions involving an outside buyer's agent¹⁷⁸) or as low as \$1.¹⁷⁹ The possibility that buyer agents might not be incentivized to show REX properties due to low commissions appears to pose little threat to REX's business model, as it is unclear how buyer agents have ever been incentivized

¹⁷⁵ Majure Supplemental Analysis, at pp. 2-3.

¹⁷⁶ Majure Report, at pp. 12-13.

¹⁷⁷ Exhibit 3.

¹⁷⁸ Majure Report, at pp. 28-29.

¹⁷⁹ While the NAR requires listing brokers to specify the commission being offered to other MLS participants when listing on the MLS, as Dr. Majure points out: "[t]he listing broker retains the right to determine the amount of compensation offered." <https://www.nar.realtor/handbook-on-multiple-listing-policy/commission/cooperative-compensation-offers-section-1-information-specifying-the-compensation-on-each> (accessed April 6, 2021).

to show REX homes and because REX's business model is, according to Dr. Majure, predicated on using "innovations in online marketing that allow more precise ad targeting" to advertise "directly to consumers who are likely to be interested in one of their listings."¹⁸⁰ By co-listing on the MLS, REX could ensure that its properties appear on the "Agent" tab on Zillow and REX's ability to directly target potential consumers should be unaffected, regardless of whether any offered commission is "typical or customary" or not.¹⁸¹ REX could also, or alternatively, increase its promotional efforts using "the latest AI, machine learning, and data technologies to find the right buyer"¹⁸² outside of Zillow, including on key promotional channels such as Google, Facebook, Instagram, Bing, and mobile apps.¹⁸³ Dr. Majure has not sufficiently explained why REX could not use these alternative promotional channels to maintain and expand REX's business as much as it would have but for Zillow's display change.

2. *Harm to Consumers*

69. In addition, Dr. Majure claims that harm to REX's ability to execute its business model will harm consumers by causing them to pay higher commissions under a traditional brokerage model. Dr. Majure claims that consumers primarily benefit from REX's business model through reduced commissions. According to Dr. Majure, average commissions for REX-brokered transactions are approximately 3.3 percent (2.1 percent paid to REX and 1.2 percent paid to buyer agents), as compared to average MLS commissions of 5.5 percent (2.8 percent paid to the seller's agent and 2.7 percent to the buyer's agent). Dr. Majure claims that REX enables consumers to save an average

¹⁸⁰ Majure Report, at p. 12. I understand that the Zillow webpage displays REX's involvement as a listing agent for some properties that are co-listed. Declaration of Laura B. Najemy, April 29, 2021, at pp. 5-25.

¹⁸¹ In fact, Dr. Majure's suggestion that co-listing dramatically increases views of REX property listings on Zillow strongly suggests that any alleged harm to REX caused by Zillow's display change can be mitigated. Majure Supplemental Analysis, at pp. 2-3. Moreover, given that MLS listings appear on popular websites such as Realtor.com and Redfin, co-listing on the MLS and pre-committing to nominal buyer's agent commissions would also ensure increased exposure of REX properties on those websites as well. *See, e.g.*, Declaration of Laura B. Najemy, April 29, 2021, at pp. 10-12, 20, 25.

¹⁸² <https://www.rexhomes.com/marketing-rex> (accessed April 1, 2021).

¹⁸³ <https://www.rexhomes.com/sell-with-rex> (accessed April 27, 2021) ("Our tech geniuses have come up with algorithms and computations that use data and AI to find qualified buyers. We then actively market your home to those buyers across a broad range of targeted channels like Zillow, Trulia, Google, Facebook, Instagram, Bing, as well as in print. Simply put, we don't wait for your perfect buyer to find us. We find them."); <https://www.rexhomes.com/marketing-rex> (accessed April 1, 2021) ("We create custom digital campaigns that target specific buyers and then send them to your home's landing page. From Zillow, to Facebook, to mobile apps, and more.").

of 2.2 percentage points, or approximately \$10,500 based on the average price of REX properties, on commissions relative to a traditional brokerage model.¹⁸⁴

70. However, these claimed commission savings likely overstate the benefits of REX's business to REX customers. First, Dr. Majure's analysis fails to consider potential differences in sale prices across REX and MLS listed properties. Ultimately, what is relevant from the seller's perspective is the *final sale price of the home net of commissions*, which depends on both the price at which the home is sold to the buyer and the commission rate paid to agents. Dr. Majure's comparison of REX and MLS percentage commission rates accurately reflects the benefits of REX's business model only if the home would be sold for the same amount regardless of whether it was listed with REX or on the MLS. To the extent that REX-listed properties are listed at lower prices than they otherwise would be on the MLS, which REX's website suggests may be the case,¹⁸⁵ Dr. Majure's analysis of the relative commission rates overstates the benefits to consumers of listing with REX. Beyond lower starting prices, net transaction prices may be lower on REX-listed properties than for comparable MLS properties due to REX's much smaller buyer network and failure to incentivize buyer agents to find potential buyers for the property.¹⁸⁶ This difference would further reduce seller benefits of lower commission levels.

¹⁸⁴ Majure Report, at p. 26.

¹⁸⁵ <https://www.rexhomes.com/faq> (accessed April 1, 2021) ("since REX charges less than traditional agents, the house can be priced lower."). This point is also discussed in consumer reviews of REX's service. *See, e.g.*, <https://www.google.com/search?q=rex+real+estate+reviews+california&oq=rex+real+estate+reviews+californi&aqs=chrome.0.0j69i57.3586j0j4&sourceid=chrome&ie=UTF-8#lrd=0x80e82443a8ccaeal:0x86a80ca02820c6da,1,,,&spf=1618597658896> (accessed April 16, 2021) (Review from Greg Draper, 2020: "They low balled my sales price by 100k. I Still would be responsible for paying the buying agents fee of 2 percent as well plus there 2 percent equals 4 percent. I listed with a normal agent for 3 percent total. So I saved at least 1 percent commission."); <https://www.zillow.com/profile/REXchange/> (accessed April 28, 2021) (Review from John Massey, September 19, 2016: "After I agreed to use them I was told [] they would only take my house if I would sell it for 395K and that this was all they considered it was worth... I then paid for a full valuation by a top appraiser. He estimated it at 423K but even with that Rex told me that it was still only worth 395K. [...] If you use them I would pay extra attention to how much they price your home at because anyone can sell if the property is underpriced").

¹⁸⁶ For example, consumer reviews of REX warn that selling with REX may result in lower negotiated home prices. *See, e.g.*, <https://www.zillow.com/profile/REXchange/> (accessed April 28, 2021) (Review from kenblade1980, March 3, 2016: "...because my house was not listed on the MLS, A LOT of buyers did not know it was listed. Therefore, there was no traction, no 'multiple offers' as they promised, and a pretty lackluster result"; Review from Just111, September 10, 2018: "...the home was sold at a lower price than comparison homes"). A third-party article from June 2020 similarly warns that final home prices for REX-brokered transactions may be lower due to a smaller pool of buyers. <https://www.realestatewitch.com/what-companies-offer-the-lowest-real-estate-commission-fees/>

71. Even small differences in transaction prices for REX-listed properties relative to comparable MLS properties substantially reduce the seller's net benefits from using REX. Exhibit 4 illustrates the seller's net benefits of using REX assuming different price differentials for comparable REX-listed properties and MLS properties and commission savings allegedly enabled by REX. As the exhibit shows, if REX offers commission savings of 2.2 percentage points (as claimed by Dr. Majure) but transaction prices for comparable MLS properties are 1.0 percent higher than transaction prices for REX properties, the seller's net benefits of using REX are only 1.3 percentage points, less than 60 percent of the commission savings benefits quantified by Dr. Majure.¹⁸⁷ At some relatively small price differentials, sellers would be *worse off* listing with REX, even with lower commissions. For example, at commission savings of 1.4 percentage points,¹⁸⁸ the seller would be worse off listing with REX if transaction prices are at least 1.5 percent higher for comparable properties listed on the MLS.¹⁸⁹ Indeed, it is likely in many cases that sellers would be worse off on a net price basis, but Dr. Majure has merely assumed that sellers would be better off.
72. Further, Dr. Majure's calculations may overstate the benefits of listing with REX by comparing REX commissions to average commissions for traditional brokerage services that use the MLS as opposed to other types of alternative brokerage services. Dr. Majure's analysis implicitly assumes that, if REX did not exist, customers who would use REX would use traditional brokerage firms instead. However, as Dr. Majure's report illustrates, approximately 87 percent of REX customers report that "low fees" is their primary motivation for listing with REX,¹⁹⁰ suggesting that their next-best alternative may be other brokerage services that offer reduced fees, or foregoing a broker altogether, rather than a traditional brokerage.¹⁹¹ As I described above in Section IV.B.3, there are several similarities between REX's services and those offered by discount brokerages, such as

(accessed April 9, 2021) ("The biggest drawback to [REX's business model] is that it significantly shrinks the pool of potential buyers—meaning the final price might be a lot lower than it could've been.").

¹⁸⁷ Calculated as $1.3 \div 2.2 = 0.591$.

¹⁸⁸ According to Dr. Majure, REX enables average commission savings of approximately 1.4 percentage points for transactions involving a separate buyer's agent. Approximately 60 percent of REX transactions involve a separate buyer's agent. Majure Report, at pp. 28-29.

¹⁸⁹ Exhibit 4.

¹⁹⁰ Majure Report, at Exhibit 11.

¹⁹¹ Neither REX nor Dr. Majure allege that discount brokerages such as Redfin are harmed by Zillow's display change in accordance with NAR rules.

Redfin. Relative to discount brokerage Redfin, which lists properties on MLSs,¹⁹² Dr. Majure's calculations suggest that, relative to Redfin, REX's business model offers substantially smaller commission savings of 0.7 to 1.2 percentage points on average, amounting to average savings of \$3,341 to \$5,368 per home.¹⁹³ For the 60 percent of REX transactions that involve a separate buyer's agent, Dr. Majure's calculations suggest that REX's commission rates may be 0.1 percentage points *higher* than those offered by Redfin.¹⁹⁴

73. In addition, Dr. Majure fails to address how long it takes for REX to sell homes and the likelihood that homes do sell, two important issues for home sellers.¹⁹⁵
74. Dr. Majure also fails to consider services and benefits offered by traditional brokerage firms that are not available with REX, or are not well executed by REX. While REX claims to offer all services that are provided by traditional brokers, REX's services appear to differ from a traditional brokerage in certain respects. For example, as some consumer reviews observe,¹⁹⁶ REX does not have a physical presence in some of the locations in which it has listings. While REX has listings in approximately 40 locations across 19 states, it maintains offices in only 10 cities.¹⁹⁷ In locations in which REX does not have a physical presence, services may be performed remotely or by freelancers.¹⁹⁸
75. Finally, Dr. Majure's analysis fails to address how buyers might be affected by REX's business model. For example, REX's website notes that: "if a buyers agent shows up...[y]our REX Agent

¹⁹² <https://www.redfin.com/definition/multiple-listing-service> (accessed April 27, 2021).

¹⁹³ Majure Report, at p. 27. Calculated as $\$447,294 \times 0.7\% = \$3,341$ and $\$447,294 \times 1.2\% = \$5,368$. See Majure Report, at p. 26 (reporting that the average price of a REX-brokered property sold in 2019-2020 was \$447,294).

¹⁹⁴ According to Dr. Majure, Redfin offers total combined commission rates of 4 to 4.5 percent, whereas REX commission rates for transactions involving a separate buyer's agent are 4.1 percent on average. Majure Report, at pp. 27, 29.

¹⁹⁵ See, e.g., <https://www.opendoor.com/w/blog/why-days-on-market-matter> (accessed April 27, 2021); <https://www.zillow.com/sellers-guide/average-time-to-sell-a-house/> (accessed April 27, 2021).

¹⁹⁶ <https://web.archive.org/web/20201017154040/https://listwithclever.com/real-estate-blog/rex-real-estate/> (accessed April 24, 2021).

¹⁹⁷ <https://www.rexhomes.com/contact> (accessed April 27, 2021); <https://www.rexhomes.com/about> (accessed April 1, 2021); <https://www.rexhomes.com/buy-with-rex> (accessed April 8, 2021).

¹⁹⁸ <https://web.archive.org/web/20201017154040/https://listwithclever.com/real-estate-blog/rex-real-estate/> (accessed April 24, 2021).

will ask the buyer to pay their own agent's fee.”¹⁹⁹ This omission in Dr. Majure's analysis suggests that the total commission paid to agents may exceed the 3.3 percent average commission claimed by him, suggesting that even if sellers are better off in the presence of REX in the marketplace, buyers may not be, which, again, likely limits the set of potentially interested buyers.²⁰⁰ An analysis of overall welfare effects of REX's participation in the marketplace should take both of these factors into account, and should net out any purported efficiency gains that simply represent transfers of wealth from buyers to sellers.

76. To summarize, Dr. Majure's calculation of average commission reductions enabled by REX likely exaggerates potential benefits to REX customers and, therefore, exaggerates potential harm to REX's customers if REX is unable to execute its business model. The flaws in Dr. Majure's analysis notwithstanding, his own calculations suggest that the maximum potential harm to REX consumers is relatively modest. Based on the number of REX-brokered transactions in 2020 and Dr. Majure's claimed commission savings, the maximum potential harm to REX customers in terms of foregone commission savings if REX were not able to operate in the marketplace would be approximately \$4.7 million to \$8.0 million relative to discount brokerage Redfin, or \$14.7 million relative to traditional brokerages.²⁰¹

3. *Harm to Competition*

77. While Dr. Majure claims that Zillow's adherence to local MLS rules harms competition in the purported market for real estate brokerage services,²⁰² he fails to establish that REX has exerted, or has the potential to exert, any “competitive pressure” on the real estate brokerage industry so as to benefit customers of other brokerages.

¹⁹⁹ <https://www.rexhomes.com/faq/seller> (accessed April 1, 2021).

²⁰⁰ It is not clear, and Dr. Majure has not sufficiently explained, what REX's average commission rate of 3.3 percent represents and whether it includes any commissions paid by a buyer to a buyer's agent.

²⁰¹ According to REX and Dr. Majure, REX brokered approximately 1,400 transactions in 2020, the average price of a REX-brokered property sold in 2019-2020 was \$477,294, and average commission savings in 2019-2020 were 0.7 to 1.2 percentage points relative to Redfin and 2.2 percentage points relative to traditional brokerages. Total claimed savings calculated as $1,400 \times \$477,294 \times 0.7\% = \$4,677,481$; $1,400 \times \$477,294 \times 1.2\% = \$8,018,539$; and $1,400 \times \$477,294 \times 2.2\% = \$14,700,655$. Majure Report, at pp. 26-27; Declaration of Jack Ryan (REX Co-founder and CEO), March 8, 2021, at p. 4.

²⁰² Majure Report, at pp. 29-30.

78. As I described above, REX has a limited presence in the real estate industry, accounting for approximately 0.02 percent of total home sales in 2020²⁰³ and less than 1.1 percent of listings even within REX's top locations.²⁰⁴ [REDACTED]

[REDACTED]²⁰⁵ Dr. Majure has not presented any evidence, nor have I seen any, that most, or even a sizeable number, of sellers consider REX as a viable alternative to traditional brokerage services, or that brokers consider REX when setting prices. Dr. Majure presents no evidence that REX's presence has caused or likely will cause other brokers to decrease their commissions and/or improve their services, either in direct response to competing with REX for particular customers or otherwise.

79. The limited available industry commentary on REX's business does not suggest that REX has had a widespread influence on the industry generally or in any particular location, or that customers have universally positive experiences with REX. On one hand, some customers report being satisfied with REX's service and highlight positive aspects of the experience such as commission savings, an easy transaction process, and a helpful and professional REX team.²⁰⁶ On the other hand, some third-parties and consumers report negative experiences with REX and express skepticism about the benefits of REX's business model. For example, Clever's review of REX from 2020 commented on the disadvantages of REX's strategy of not listing properties on the MLS, noting that: "[n]ot listing on the MLS significantly reduces your home's visibility."²⁰⁷ Another 2020 review of REX from Home Openly, a company that connects home sellers and buyers with real estate agents through its "open marketplace,"²⁰⁸ cautioned that: "[t]he main disadvantage of REX

²⁰³ Calculated as 1,400 REX transactions ÷ 6.5 million homes sold in the United States in 2020. Declaration of Jack Ryan (REX Co-founder and CEO), March 8, 2021, at p. 4; Zillow Group, Inc. SEC Form 10-K for the fiscal year ended December 31, 2020, at p. 6.

²⁰⁴ Exhibit 2.

²⁰⁵ Exhibit 3.

²⁰⁶ <https://web.archive.org/web/20201017154040/https://listwithclever.com/real-estate-blog/rex-real-estate/> (accessed April 24, 2021).

²⁰⁷ <https://web.archive.org/web/20201017154040/https://listwithclever.com/real-estate-blog/rex-real-estate/> (accessed April 24, 2021).

²⁰⁸ <https://homeopenly.com/> (accessed April 24, 2021).

Real Estate is the lack of MLS exposure...There is an added value behind MLS exposure when listing homes for sale in the United States, something that REX Real Estate does not offer.”²⁰⁹ In addition, Clever’s review of REX highlighted drawbacks to REX’s limited agent coverage and team-based service approach, warning that: “[s]ome of its markets only have one agent! Others have zero agents and the whole process is handled remotely with ad hoc support.”²¹⁰ Similarly, consumer reviews of REX discuss issues with lack of interest from buyers and REX’s team-based service model. For example, one review on Zillow notes that: “A LOT of buyers did not know it was listed.”²¹¹ Other reviews warn that: “[b]uyers have to deal with multiple people who don’t do their jobs well,”²¹² and there is “no consistency, nobody ever knows whats [sic] going on with your listing.”²¹³

D. Dr. Majure Fails to Recognize the Procompetitive Benefits Stemming from Zillow’s Participation in Local MLSs and Use of IDX Data

80. Dr. Majure’s analysis focuses on the alleged harm to REX from Zillow’s display change in accordance with the No Comingling Policy, but fails to consider the procompetitive benefits of Zillow’s participation in the MLSs and use of IDX data feeds. As I described above in Section V, my understanding is that Zillow’s decision to become a participant in MLSs and obtain listing data via IDX data feeds enabled it to (1) improve the quality and coverage of its listing data for its

²⁰⁹ https://homeopenly.com/Reviews/REX_Real_Estate (accessed April 7, 2021).

²¹⁰ <https://web.archive.org/web/20201017154040/https://listwithclever.com/real-estate-blog/rex-real-estate/> (accessed April 24, 2021).

²¹¹ <https://www.zillow.com/profile/REXchange/> (accessed April 28, 2021) (Review from kenblade1980, March 3, 2016: “Another thing I unfortunately realized after it got listed is that because my house was not listed on the MLS, A LOT of buyers did not know it was listed. Therefore, there was no traction, no ‘multiple offers’ as they promised, and a pretty lackluster result.”).

²¹² <https://www.zillow.com/profile/REXchange/> (accessed April 28, 2021) (Review from Just111, September 10, 2018: “As a buyer this was a terrible experience. Awful company. Buyers have to deal with multiple people who don’t do their jobs well. To sum it up, agents are either inexperienced or sloppy and make lots of mistakes, and you get very little help or guidance if any. [...] Sure, REX advertises savings, but not sure if it’s worth them as the whole process will cause you lots of extra grey hairs as a buyer, and it certainly did it to us.”).

²¹³ <https://www.zillow.com/profile/REXchange/> (accessed April 28, 2021) (Review from devillenewhall, October 26, 2019: “They are not professionals in any means. Worst 3 month contract of my life. Dont waste your time working with this company. This company always fires and hires new employees, no consistency, nobody ever knows whats going on with your listing.”). *See also*, https://www.facebook.com/pg/REXRealEstateExchange/reviews/?ref=page_internal (accessed April 16, 2021) (Review from Lisa Glatzel, February 2, 2020: “Because they are on salary and not on commission we felt no urgency on their part to get our house sold. BTW, house never sold through REX”).

aggregation service, and lower the costs associated with obtaining and managing those data; and (2) ensure its freedom to innovate in its aggregation services and other businesses, such as Zillow Offers, by ensuring its access to listing data. I discuss the benefits of these shifts to both consumers and Zillow below.

1. Benefits to Consumers

a. IDX Listing Data

81. Consumers benefit from the better listing coverage enabled by the IDX data relative to Zillow's prior syndication agreements. Under Zillow's prior syndication agreements with MLSs, participating brokers were able to choose not to share their listings with Zillow, which meant that Zillow had less than 100 percent listing coverage within that MLS.²¹⁴ While its coverage fluctuated over time, Zillow estimated that its recent coverage was approximately 98 percent of listings nationwide under its syndication agreements.²¹⁵ In some locations, such as Seattle, Zillow's listing coverage was substantially worse.²¹⁶ In contrast, by becoming a participant itself and switching to IDX data feeds, Zillow can now ensure that it has access to all listings posted by brokers in that MLS.²¹⁷ According to Zillow's internal analyses conducted in the normal course of business, Zillow estimated that its listings increased by approximately 3 to 5 percent after switching to IDX data feeds in January 2021.²¹⁸ These gains were even more substantial in certain metropolitan areas with lower coverage.²¹⁹ Better listing coverage benefits both homebuyers and sellers by providing more complete information about other properties listed for sale at the time.
82. Consumers also benefit from improvements to the quality and completeness of listing information on Zillow's aggregation websites enabled by Zillow's switch to higher-quality IDX data. Under Zillow's prior syndication agreements, MLSs and brokers could limit the information shared with Zillow about each listing. [REDACTED]

²¹⁴ Samuelson Declaration, at pp. 10-14; Hendricks Declaration, at p. 2.

²¹⁵ Samuelson Declaration, at p. 12.

²¹⁶ Samuelson Declaration, at pp. 12-13.

²¹⁷ Samuelson Declaration, at p. 19.

²¹⁸ Samuelson Declaration, at Exhibit 2, at p. 1.

²¹⁹ Samuelson Declaration, at p. 13.

██²²⁰ Similarly, other brokers and MLSs placed restrictions on the number of listing photos shared with Zillow.²²¹ Under the IDX agreements, Zillow has access to all information and data fields available on the MLS.²²² In addition, Zillow also decreased the delay between when new or updated listing information was published by MLSs and when that information appeared on Zillow’s websites, reducing latency for some feeds from as much as 24 hours to less than 5 minutes.²²³ In general, under Zillow’s prior syndication agreements, data received from third-parties and broker feeds were often of lower quality than data received from MLSs in terms of field completeness, error rate, and lag time.²²⁴ According to Zillow’s internal analysis of listing coverage in Seattle, Detroit, Miami, Minneapolis / St. Paul, and Salt Lake City, Zillow’s higher-quality, MLS-sourced listing coverage increased from approximately 70 percent to 90 percent under its previous syndication agreements to 100 percent with IDX data feeds, resulting in well over 10,000 improved listings.²²⁵ For example, in Seattle alone, switching to IDX data feeds resulted in the addition of approximately 3,000 MLS-sourced listings on Zillow.²²⁶

83. Zillow has emphasized these benefits to investors, describing how the IDX data feeds are: “going to improve the customer experience with respect to the timeliness of information on our side”²²⁷ and “will provide a richer content for all of our customers who are looking at our site.”²²⁸ Similarly, industry commentators have noted that IDX data will: “improve the accuracy, timeliness, and depth of information in the core Zillow websites.”²²⁹ Both homebuyers and sellers benefit from more

²²⁰ Samuelson Declaration, at pp. 8, 14-15.

²²¹ Samuelson Declaration, at p. 15.

²²² Samuelson Declaration, at p. 19.

²²³ Samuelson Declaration, at Exhibit 2, at p. 3. *See also*, Samuelson Declaration, at pp. 15-16, 19.

²²⁴ Samuelson Declaration, at pp. 14-15.

²²⁵ Samuelson Declaration, at pp. 12-14. 70 percent to 90 percent reflects estimated MLS-sourced listing coverage in 2020.

²²⁶ Samuelson Declaration, at p. 24.

²²⁷ Zillow Group Inc. at Needham Virtual Internet Services Conference, November 16, 2020, at p. 6. *See also*, <https://www.zillow.com/agent-resources/blog/creating-a-better-real-estate-experience/> (accessed April 1, 2021).

²²⁸ Zillow Group Inc. at Nasdaq Virtual Investor Conference, December 1, 2020, at p. 6.

²²⁹ Deutsche Bank, “Zillow Continues Evolution into a Platform with Shift to Brokerage,” September 23, 2020, at p. 1. *See also*, Jefferies, “Zillow: Making the Right Upgrades,” February 10, 2021, at p. 1 (“the MLS integration provides real-time data and more comprehensive listing information.”).

complete, higher quality, and more up-to-date information about real estate listings: homebuyers are able to learn more about potential properties to inform their purchase decisions, and home sellers are better able to research prices of comparable homes and convey more information about their property to potential buyers.

84. In addition, consumers benefit from Zillow's increased competitiveness as a result of the higher-quality information and increased listing coverage provided by the IDX data. Specifically, Zillow's ability to compete more effectively with other aggregation services such as Realtor.com and Redfin has procompetitive benefits to consumers through higher quality aggregation services.
85. The value of Zillow's improved listing data to consumers is likely substantial. Approximately 6.5 million homes were sold in the United States in 2020²³⁰ and Zillow research cited by industry sources suggests that two-thirds of homebuyers use Zillow,²³¹ suggesting that approximately 4.3 million homebuyers used Zillow in their home search in 2020. Exhibit 5 provides an illustrative quantification of the potential benefits to consumers assuming different shares of homebuyers on Zillow benefit from the improved data, and assuming different valuations for those improvements. For example, according to research conducted by the NAR and cited by industry analysts, approximately 93 percent of homebuyers found online websites, such as Zillow, to be the most helpful tool for their home search.²³² This finding suggests that the vast majority of homebuyers on Zillow would value and benefit from improved listing data quality and coverage on Zillow's aggregation websites. As shown in Exhibit 5, assuming 90 percent of the approximately 4.3 million homebuyers using Zillow benefit from the higher-quality listing data, the total value of the benefits associated with Zillow's use of IDX data would be approximately \$19.5 million if each consumer values the improvements at just \$5 on average, or approximately \$39 million if each consumer values the improvements at an average of \$10.
86. In general, more comprehensive, accurate, and current information is particularly valuable in the context of the major life decision and investment of buying a home. For most Americans,

²³⁰ Zillow Group, Inc. SEC Form 10-K for the fiscal year ended December 31, 2020, at p. 6.

²³¹ Jefferies, "Zillow Deep Dive: Late to the Open House, but Coming Ready to Bid," October 1, 2020, at p. 9.

²³² Jefferies, "Zillow Deep Dive: Late to the Open House, but Coming Ready to Bid," October 1, 2020, at p. 9.

purchasing a home is the single largest transaction of their lifetimes.²³³ By way of illustration, a value of \$5 to \$10 for access to improved listing data represents less than 0.001 percent of the median U.S. home price in March 2021²³⁴—a small fraction of the much larger transaction it informs. In some situations, the value of improved listing data to a given consumer could be much larger. For example, the improved listing coverage enabled by the IDX data could result in a homebuyer finding, and ultimately buying, a better home that they otherwise would not have found if it did not appear on Zillow. Similarly, more accurate and complete information on open house timing and offer deadlines can help ensure that an interested buyer does not miss out on an opportunity to bid on a home. Alternatively, more accurate and complete information about a given listing could save a potential homebuyer a trip to that property if it does not meet their search criteria. Improved listing data can also be of considerable value to home sellers. For example, higher-quality photographs might attract more potential buyers to a listing, which could benefit the seller through a faster sale or multiple offers, leading to a higher price.

b. Zillow's Freedom to Innovate

87. Zillow's enhanced freedom to innovate benefits consumers by enabling Zillow to introduce new offerings that promote competition and improve consumer welfare. For example, Zillow's expansion of its Zillow Offers program to include in-house brokerage services benefits consumers by improving their experience with Zillow Offers. Using Zillow Homes brokerage services improves the customer experience by streamlining the transaction process by reducing the number of handoffs between Zillow and external partners.²³⁵ According to Zillow CEO Richard N. Burton: "...the prime thing we want to do is integrate this, make it super easy and convenient and maybe joyful at some point so that people can just get to their better place."²³⁶
88. Further, as I describe in more detail in the section below, Zillow's vertical integration of brokerage services in its Zillow Offers business reduces its brokerage costs, which could enable Zillow to

²³³ <https://www.zillow.com/report/2019/buying-a-home-in-america/what-buyers-sacrifice-to-afford-a-home/> (accessed April 23, 2021).

²³⁴ According to the NAR, the median home sale price was \$329,100 in March 2021. *See* <https://www.nar.realtor/research-and-statistics> (accessed April 22, 2021).

²³⁵ Samuelson Declaration, at p. 17.

²³⁶ Zillow Group Inc. Q4 2020 Earnings Call Transcript, February 10, 2021, at p. 13.

reduce selling costs for customers of Zillow Offers. Zillow's Mr. Burton echoed this benefit on a recent earnings call, replying to a question about Zillow's increased bundling of services by noting: "[w]e want to bring price down as much as we possibly can."²³⁷

89. In addition, Zillow Offers' ability to compete more effectively as a principal in real estate transactions is a procompetitive benefit to other real estate sellers and buyers through increased choice in real estate transaction models and perhaps better prices.

2. *Benefits to Zillow*

a. *IDX Listing Data*

90. Zillow's use of IDX data enhances the competitiveness of Zillow's aggregation services by providing higher-quality data with better coverage, field completeness, photo quality, and timeliness of feed updates.²³⁸ While Zillow tried to obtain the most comprehensive and highest-quality listings via its syndication agreements, it still lagged other aggregation services using IDX data feeds in certain major metropolitan areas.²³⁹ For example, Zillow's listing coverage in Seattle had substantial gaps and was inferior to listing coverage on other aggregation services that obtained listings from IDX feeds, such as Redfin.²⁴⁰ These coverage gaps led to a worse customer experience with Zillow.²⁴¹ [REDACTED]

[REDACTED]²⁴² Access to higher-quality listing data allows Zillow to improve the quality of its aggregation

²³⁷ Zillow Group Inc. Q4 2020 Earnings Call Transcript, February 10, 2021, at p. 13.

²³⁸ Samuelson Declaration, at pp. 18-19.

²³⁹ See Samuelson Declaration, at pp. 12-13.

²⁴⁰ Samuelson Declaration, at pp. 12-13; <https://www.redfin.com/definition/multiple-listing-service> (accessed April 27, 2021).

²⁴¹ Samuelson Declaration, at pp. 12-13. See also, <https://www.seattlehome.com/blog/why-you-cant-find-home-sale-zillow-or-trulia/> (accessed April 19, 2021).

²⁴² Samuelson Declaration, at pp. 14-15.

service, which enhances its ability to compete with the next-largest aggregation services, Realtor.com and Redfin, both of which obtain listings directly from IDX data feeds.²⁴³

91. Further, improving the quality of Zillow's aggregation services also benefits Zillow's businesses more broadly as its aggregation websites are key entry points for its other offerings, such as Zillow Offers or Zillow Home Loans.²⁴⁴ By ensuring that its aggregation websites are a popular landing site for consumers interested in real estate transactions, Zillow can better promote and drive scale of its other offerings.
92. In addition, switching to obtaining listings via IDX data feeds reduces Zillow's transaction costs and administrative complexity and [REDACTED].²⁴⁵ For example, I understand from Errol Samuelson, Chief Industry Development Officer at Zillow Group, that Zillow previously had to negotiate non-standardized agreements individually and manage relationships with approximately 585 MLSs and thousands of brokers in order to obtain access to their listings.²⁴⁶ Maintaining this system required a team of approximately 70 Zillow employees dedicated to managing ongoing relationships and negotiating terms with MLSs and brokers, and necessitated continuous updates to Zillow's contracts as brokers entered and exited the industry.²⁴⁷ In contrast, the IDX agreements are standardized, and there is no negotiating or altering the terms, thereby eliminating the need to negotiate terms with individual MLSs and brokers.²⁴⁸ [REDACTED]

²⁴³ See <https://www.redfin.com/definition/multiple-listing-service> (accessed April 27, 2021); <https://www.realtor.com/advice/buy/what-is-the-mls-multiple-listing-service/> (accessed April 28, 2021).

²⁴⁴ See, e.g., Zillow Group Inc. Q1 2019 Earnings Call Transcript, May 9, 2019, at pp. 3-4 ("Zillow Offers is growing so quickly because it is standing on the shoulders of a huge real estate shopping audience anchored by the Zestimate that has been built up over 14 years.").

²⁴⁵ Samuelson Declaration, at pp. 14, 19-20. Industry commentators have also noted the potential cost savings associated with Zillow's switch to IDX data feeds. See, e.g., Stephens, "First Look: Zillow Announces Notable Pivot; Adding In-House Real Estate Agents," September 23, 2020, at p. 1.

²⁴⁶ Samuelson Declaration, at pp. 10, 14.

²⁴⁷ Samuelson Declaration, at p. 14.

²⁴⁸ Samuelson Declaration, at p. 20.

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b. Zillow's Freedom to Innovate

93. In addition, the enhanced freedom to innovate enabled by Zillow's participation in the local MLSs and switch to IDX data feeds provides substantial benefits to Zillow.
94. For example, Zillow's decision to become a participant in local MLSs and obtain listing data via IDX data feeds enabled it to improve its Zillow Offers business by vertically integrating brokerage services without compromising its access to listing data for its aggregation websites.²⁵⁰ Vertically integrating brokerage services into the Zillow Offers business benefits Zillow by reducing its costs for Zillow Offers transactions.²⁵¹ These cost reductions could enable Zillow to lower selling fees for consumers selling homes to Zillow Offers and drive scale for its Zillow Offers business and adjacent businesses, further improving the economics of the transaction for Zillow.
95. In addition, the integration of brokerage services into the Zillow Offers business also allows Zillow to better control, and improve, the customer's experience when selling a home to Zillow Offers.²⁵² In a recent earnings call, Zillow's CEO Richard N. Barton remarked that: "with Zillow Offers and now the brokerage that's associated with Zillow Offers, we're finally actually in the end-user customer satisfaction customer service business."²⁵³ This enhanced experience likely contributes to increased consumer interest in and consideration of Zillow's offering, which further drives scale of the Zillow Offers business and improves the economics of the business. The provision of a smooth and hassle-free selling experience through Zillow Offers also further reinforces Zillow's brand image as a company that "make[s] it radically easier for people to move" and delivers a "seamless,

²⁴⁹ Samuelson Declaration, at pp. 19-20.

²⁵⁰ Samuelson Declaration, at p. 17.

²⁵¹ Samuelson Declaration, at p. 6.

²⁵² Samuelson Declaration, at pp. 6, 17. *See also*, Zillow Group Inc. Q3 2020 Earnings Call Transcript, November 5, 2020, at p. 4 ("Last month...we announced that we'll launch brokerage services for our Zillow Offers transactions early next year. Bringing those services in-house will allow us to deliver a more seamless experience for those buying homes from Zillow and reduce our selling costs over time."), 11 ("we view our recent announcement to begin to bring some of the [Zillow Offers]-owned Homes transactions in-house simply as a customer streamline experience move.").

²⁵³ Zillow Group Inc. Q4 2020 Earnings Call Transcript, February 10, 2021, at p. 13.

convenient and consistent customer experience, from the initial search process through to closing,”²⁵⁴ which may have positive effects on other Zillow businesses and/or future Zillow innovations.

E. The Procompetitive Benefits of Zillow’s Participation in Local MLSs and Use of IDX Data Likely Outweigh Any Harm Stemming from REX’s Listings Being Placed on a Different Tab on Zillow

96. To summarize the discussion above, Dr. Majure’s analysis focuses only on potential harm stemming from REX’s listings being placed on a different tab on Zillow, but fails to consider the procompetitive benefits of Zillow’s participation in local MLSs and use of IDX data feeds. The evidence suggests that these procompetitive benefits are substantial and likely outweigh any potential harm stemming from REX’s listings being placed on a different tab on Zillow.
97. To the extent that REX customers are harmed, Dr. Majure’s analysis suggests that the maximum potential harm to REX customers in terms of foregone commission savings if REX were not able to operate in the marketplace in 2020 would be approximately \$4.7 million to \$8.0 million relative to discount brokerage Redfin, or \$14.7 million relative to traditional brokerages. These estimates likely far exaggerate any potential harm to REX customers because Dr. Majure’s analysis fails to account for several factors, including potential differences in sale prices of REX homes relative to MLS homes, other services and benefits offered by traditional brokerages that are not available with REX, and the effect of REX’s business model on buyers, among other things.
98. In comparison, the *procompetitive* benefits of Zillow’s participation in local MLSs and use of the IDX data are substantial. According to Zillow’s internal analyses, switching to the IDX data increased its listings by an estimated 3 to 5 percent, equating to tens of thousands of additional listings.²⁵⁵ This far outstrips REX’s 426 listings that were shifted to Zillow’s “Other Listings” tab (but are still available on Zillow).²⁵⁶ In addition, Zillow’s analyses suggest that switching to the IDX data increased Zillow’s count of high-quality MLS-sourced listings—which often have more complete information, lower error rates, and less lag time than listings obtained through third-party and broker feeds—by an estimated 10 to 30 percent in major metropolitan areas such as Seattle,

²⁵⁴ <https://www.zillowgroup.com/about-us/story/> (accessed April 27, 2021).

²⁵⁵ Samuelson Declaration, at Exhibit 2, at p. 1.

²⁵⁶ See Exhibit 1.

Detroit, Miami, Minneapolis / St. Paul, and Salt Lake City, equating to tens of thousands of additional high-quality listings in those areas.²⁵⁷ For example, as illustrated in Figure 1 below, Zillow’s use of IDX data feeds resulted in approximately 3,000 additional MLS-sourced listings in the Seattle area alone, roughly 7 times as many listings as provided by REX in the entire United States and roughly 750 times as many listings as provided by REX in Seattle.²⁵⁸ On balance, even assuming that REX’s listings are less visible to consumers on the “Other Listings” tab as REX alleges, this evidence suggests that the improved listing coverage associated with the IDX data increases information and choice for Zillow users.

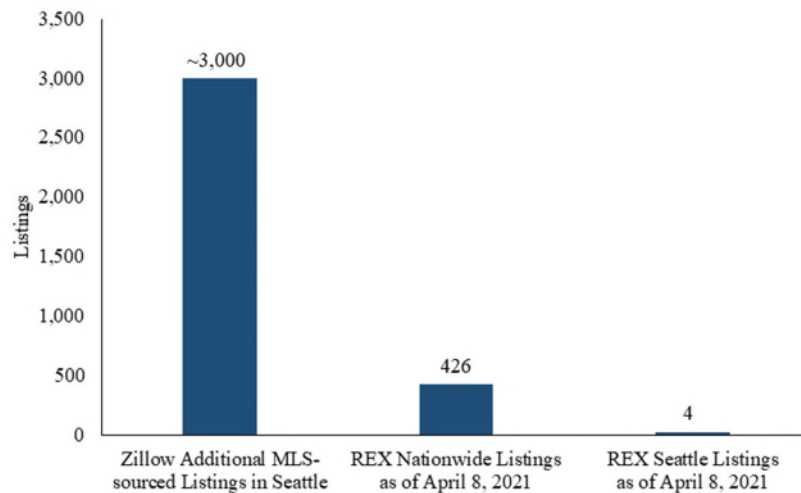


Figure 1: Comparison of Additional Zillow MLS-sourced Listings in Seattle and REX Listings

99. In addition to better listing coverage, consumers also benefit from Zillow’s use of IDX data through higher-quality listing data on Zillow’s websites with better field completeness, higher photo quality, and more up-to-date information. Zillow’s aggregation websites are popular destinations for homebuyers and home sellers, drawing an average of 200 million unique visitors per month in 2020.²⁵⁹ Given the size of Zillow’s user base, even small benefits to Zillow users from improved listing data quickly outstrip any potential harm to REX customers. For example, with 200 million active users, the benefits to Zillow users exceed Dr. Majure’s estimated maximum potential harm

²⁵⁷ Samuelson Declaration, at pp. 12-14.

²⁵⁸ Samuelson Declaration, at p. 24. Calculated as $3,000 \div 426 = 7.042$ and $3,000 \div 4 = 750$.

²⁵⁹ Zillow Group, Inc. SEC Form 10-K for the fiscal year ended December 31, 2020, at pp. 43-44.

to REX consumers if each Zillow user benefits from the higher-quality IDX data by just \$0.024 to \$0.074 on average.²⁶⁰ Even considering only the estimated 4.3 million consumers who purchased a home in 2020 and used Zillow in their search process (and ignoring Zillow's other 195.7 million monthly unique visitors), the benefits exceed the maximum potential harm to REX consumers if each of those consumers benefits from the higher-quality IDX data by just \$1.09 to \$3.34 on average.²⁶¹ Given the size and importance of most home purchases, the value of more comprehensive, accurate, and current information to inform that purchase is likely considerably higher than these amounts.

100. Further, Zillow and consumers also benefit from Zillow's expansion of its Zillow Offers program to include in-house brokerage services, which is enabled by Zillow's decision to join local MLSs and switch to IDX data feeds. As I described above, Zillow's integration of brokerage services is expected to benefit consumers through an improved transaction experience and potentially lower prices.
101. Overall, this evidence suggests that the procompetitive benefits of Zillow's participation in local MLSs and use of IDX data likely outweigh any potential harm to REX and REX's customers stemming from Zillow's display change, and/or any potential harm to the marketplace resulting from REX's decreased participation in the marketplace.

VII. PURPORTED IRREPARABLE HARM TO REX

A. Dr. Majure Fails to Demonstrate that Any Harm to REX is Irreparable

102. Dr. Majure claims that Zillow's compliance with the NAR's No Comingling Policy will cause irreparable harm to REX by hindering REX's ability to develop a successful track record to convince potential customers to trust the company's "innovative business model," causing it to: "lose its opportunity to establish a reputation as an innovative option for sellers."²⁶² Specifically,

²⁶⁰ Calculated as \$4.7 million ÷ 200 million = \$0.0235 and \$14.7 million ÷ 200 million = \$0.0735.

²⁶¹ Calculated as \$4.7 million ÷ 4.3 million = \$1.093 and \$14.7 million ÷ 4.3 million = \$3.342.

²⁶² Majure Report, at pp. 29-30. I understand from counsel that some courts have precluded an expert from testifying about their legal conclusions regarding "irreparable harm." In this section, I address from an economic perspective Dr. Majure's assertion that REX will be irreparably harmed if an injunction is not issued—a point with which I disagree. If the Court determines that Dr. Majure cannot offer opinions about irreparable harm, I would withdraw that portion of my opinion.

while Dr. Majure considers the possibility that REX co-list its listings on an MLS, he asserts that co-listing: “requires REX and its clients to forego the advantages of its innovative approach” and “requires REX to abide by the same terms for MLS participation that already limit competition among NAR’s members.”²⁶³ According to Dr. Majure: “co-listing on the MLS effectively prevents REX from executing its innovative business model that allows for negotiation with buyer agents and saves consumers commission fees.”²⁶⁴

103. However, Dr. Majure fails to adequately consider options available to REX that would allow it to continue to execute its business model while listing on the MLS to increase the visibility of its properties on Zillow. For example, I understand that REX could co-list its properties on the MLS at very low commission rates. While the NAR requires listing brokers to specify the commission being offered to other MLS participants when listing on the MLS, as Dr. Majure points out: “[t]he listing broker retains the right to determine the amount of compensation offered.”²⁶⁵ In accordance with these rules, REX could co-list its properties on the MLS and offer commissions of, for example, 2.1 percent (the average buyer’s agent commissions for REX transactions involving an outside buyer’s agent²⁶⁶) or as low as \$1.
104. Dr. Majure claims that sellers participating in the MLS: “have an incentive to offer a typical or customary commission rather than risk the possibility that buyers’ agents might not show the property to buyers.”²⁶⁷ However, the possibility that buyers’ agents might not show REX properties appears to pose little threat to REX’s business model, which is, according to Dr. Majure, predicated on using “innovations in online marketing that allow more precise ad targeting” to advertise “directly to consumers who are likely to be interested in one of their listings.”²⁶⁸ By co-listing on the MLS, REX’s ability to directly target potential consumers should be unaffected, regardless of whether any offered commission is “typical or customary” or not. According to Dr. Majure’s

²⁶³ Majure Report, at p. 32.

²⁶⁴ Majure Report, at p. 32.

²⁶⁵ <https://www.nar.realtor/handbook-on-multiple-listing-policy/commission/cooperative-compensation-offers-section-1-information-specifying-the-compensation-on-each> (accessed April 6, 2021).

²⁶⁶ Majure Report, at pp. 28-29.

²⁶⁷ Majure Report, at p. 8.

²⁶⁸ Majure Report, at p. 12.

analysis, approximately 40 percent of REX homes in 2019 and 2020 were sold to buyers who were not working with outside agents.²⁶⁹ By co-listing on the MLS and pre-committing to nominal buyer's agent commissions, REX could ensure that its properties appear on the "Agent" tab on Zillow and could continue to advertise its listings to potential homebuyers directly and encourage them to use REX buyer agents, as it was doing prior to Zillow's display change.²⁷⁰ The incentives of those buyers to purchase a REX-listed home should be unaffected. Given that MLS listings appear on popular websites such as Realtor.com and Redfin, co-listing on the MLS and pre-committing to nominal buyer's agent commissions would also ensure increased exposure of REX properties on those websites as well.²⁷¹

105. Although the REX website claims that REX does not offer commissions to non-REX buyer agents,²⁷² Dr. Majure's analysis of REX's internal data shows that buyer agent commissions were paid on approximately 60 percent of REX homes in 2019 and 2020.²⁷³ It is not clear how pre-committing to a commission as part of co-listing on the MLS would change the outcome for these sales either. Moreover, I understand that MLS rules do not prevent REX from negotiating buyer agent commissions above what is offered on the listing,²⁷⁴ similar to REX's current approach without the MLS. At worst, even if higher commissions were required during the pendency of this lawsuit, REX could cover those costs and that would amount to damages that could be recovered. In fact, Dr. Majure's suggestion that co-listing dramatically increases views of REX property listings strongly suggests that any alleged harm to REX caused by Zillow's display change can be

²⁶⁹ Majure Report, at p. 27.

²⁷⁰ I understand that the Zillow webpage displays REX's involvement as a listing agent for some properties that are co-listed. Declaration of Laura B. Najemy, April 29, 2021, at pp. 5-25.

²⁷¹ Declaration of Laura B. Najemy, April 29, 2021, at pp. 10-12, 20, 25.

²⁷² <https://www.rexhomes.com/faq/buyer> (accessed April 1, 2021).

²⁷³ Majure Report, at p. 28.

²⁷⁴ <https://www.nar.realtor/handbook-on-multiple-listing-policy/commission/cooperative-compensation-offers-section-1-information-specifying-the-compensation-on-each> (accessed April 6, 2021) ("This shall not preclude the listing broker from offering any MLS participant compensation other than the compensation indicated on his listings as published by the MLS, provided the listing broker informs the other broker in writing in advance of their submitting an offer to purchase and provided that the modification in the specified compensation is not the result of any agreement among all or any other participants in the service.").

mitigated.²⁷⁵ This analysis also suggests that REX is not facing imminent failure as a result of Zillow's display change.

106. REX could also, or alternatively, increase promotional efforts outside of Zillow. According to the REX website, key promotional channels (other than Zillow and Trulia) include Google, Facebook, Instagram, Bing, and mobile apps.²⁷⁶ Google and Facebook, in particular, are among the largest digital platforms and promote their use as venues to advertise brokerage services.²⁷⁷ REX's website also emphasizes that it uses: "the latest AI, machine learning, and data technologies to find the right buyer."²⁷⁸ In addition, REX claims that several other aspects of its business model differentiate it from traditional brokerage firms, including that its agents are salaried and do not work on commission,²⁷⁹ and that it offers a personalized dashboard to help consumers organize their legal documents and maintenance needs after purchasing a property.²⁸⁰ Dr. Majure has not sufficiently explained why REX could not use these alternative promotional channels and business practices to maintain and expand REX's business as much as it would have but for Zillow's display change. Conversely, if REX is so dependent on free promotional activity on Zillow that it cannot operate without such promotional activity, this suggests that REX's approach to brokerage may, in fact, not be as "innovative" as REX claims or bring novel benefits to consumers or the marketplace.
107. These strategies would seemingly mitigate, in large part, the alleged harm to REX's business resulting from Zillow's recent display change in accordance with the No Comingling Policy. REX could continue to execute its "innovative business model" and pursue its mission of reducing costs

²⁷⁵ Majure Supplemental Analysis, at pp. 2-3.

²⁷⁶ <https://www.rexhomes.com/sell-with-rex> (accessed April 27, 2021) ("Our tech geniuses have come up with algorithms and computations that use data and AI to find qualified buyers. We then actively market your home to those buyers across a broad range of targeted channels like Zillow, Trulia, Google, Facebook, Instagram, Bing, as well as in print. Simply put, we don't wait for your perfect buyer to find us. We find them."); <https://www.rexhomes.com/marketing-rex> (accessed April 1, 2021) ("We create custom digital campaigns that target specific buyers and then send them to your home's landing page. From Zillow, to Facebook, to mobile apps, and more.").

²⁷⁷ See, e.g., <https://ads.google.com/local-services-ads/> (accessed April 30, 2021); <https://www.facebook.com/business/industries/real-estate> (accessed April 15, 2021).

²⁷⁸ <https://www.rexhomes.com/marketing-rex> (accessed April 1, 2021).

²⁷⁹ <https://www.rexhomes.com/about> (accessed April 1, 2021).

²⁸⁰ <https://cdn.rexhomes.com/assets/docs/a-vision-for-the-future-of-the-residential-real-estate-business.pdf> (accessed April 1, 2021).

for consumers relative to traditional real estate brokerages. As such, Zillow's compliance with the NAR's No Comingling Policy will not cause REX to "lose its opportunity to establish a reputation as an innovative option for sellers," as claimed by Dr. Majure.²⁸¹

108. To summarize, it appears that REX's model is not wholly based on avoiding MLS listings or avoiding buyer-side commissions. All else equal, even if Zillow's display change would require REX's customers to pay higher commissions during the pendency of this lawsuit and/or require REX to rely more heavily on other, perhaps more costly, promotional channels as alternatives to Zillow, that would, at worst, result in monetary harm that could be recovered. If REX were so dependent on Zillow for the success and/or survival of its business that any harm from Zillow's display change could not be compensated with monetary damages, this dependency would call into question whether REX's approach to brokerage is in fact "innovative" or brings valuable novel benefits to consumers or the marketplace.

B. A Preliminary Injunction Has the Potential to Cause Substantial Harm to Zillow

109. I understand that if a preliminary injunction is entered, it may require Zillow to revert to displaying MLS-listed and non-MLS-listed properties together on its websites. According to Errol Samuelson, Chief Industry Development Officer at Zillow Group, such an action would render Zillow non-compliant with many of the local IDX Agreements, potentially threatening Zillow's access to IDX data feeds for those MLSs (both NAR and non-NAR affiliated).²⁸² If that non-compliance occurs, in order to continue providing its core services, Zillow would need to try to renegotiate syndication agreements with individual brokerages and individual MLSs. At best, that would result in Zillow losing access to higher-quality listing data, and revert to data sources that, as I described above in Section V, had issues related to data coverage, field completeness, photo quality, and timeliness of feed updates, among other things. Zillow also would have to ensure compliance with hundreds of individualized contracts, which is costly and complicated.²⁸³
110. In addition, Zillow would need to renegotiate its syndication agreements with terms consistent with its current business, which has evolved to include the provision of brokerage services to Zillow

²⁸¹ Majure Report, at pp. 29-30.

²⁸² Samuelson Declaration, at pp. 26-27.

²⁸³ Samuelson Declaration, at pp. 12-16; Hendricks Declaration, at pp. 2-3.

Offers transactions through Zillow Homes. [REDACTED]

[REDACTED].²⁸⁴ More generally, many of Zillow's prior syndication agreements were subject to termination (at the option of the counterparty),²⁸⁵ which puts Zillow's data access at risk as it continued to innovate and expand its business offerings. Since entering into its prior syndication agreements, Zillow's bargaining position seemingly has worsened, as Zillow has begun entering into certain businesses that would make consumers less reliant on traditional brokerage services, such as mortgage origination and title insurance. At best, Zillow may be able to negotiate new syndication agreements on less favorable terms than the terms of the prior syndication agreements. At worst, some individual brokerages and/or MLSs would refuse to reinstate old syndication agreements or sign new syndication agreements with Zillow, or would delay signing such agreements. As a result, Zillow could lose access to some portion of listing data, which would threaten part of its business and harm consumers who use Zillow in support of their real estate research and transactions.



Glenn Hubbard

April 30, 2021

²⁸⁴ Samuelson Declaration, at p. 17; Hendricks Declaration, at p. 3.

²⁸⁵ Samuelson Declaration, at p. 16; Hendricks Declaration, at p. 3.

APPENDIX A

ROBERT GLENN HUBBARD

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Curriculum Vitae

PERSONAL DATA

Born: In Orlando, Florida.
Marital Status: Married, two children.

FIELDS OF SPECIALIZATION

Public Economics, Corporate Finance and Financial Institutions, Macroeconomics, Industrial Organization, Natural Resource Economics, Public Policy.

EDUCATION

Ph.D., Economics, Harvard University, May 1983.
Dissertation: *Three Essays on Government Debt and Asset Markets*, supervised by Benjamin M. Friedman, Jerry A. Hausman, and Martin S. Feldstein.

A.M., Economics, Harvard University, May 1981.

B.A., B.S., Economics, University of Central Florida, June 1979, *summa cum laude*.

HONORS AND AWARDS

NACD Directorship 100, 2019.
Distinguished Eagle Scout Award, National Boy Scouts of America, November 2017.
Visionary Award, Council for Economic Education, 2016.
Silver Beaver Award, Boy Scouts of America, 2014.
Medal of Honor, Foreign Policy Association, 2014.
Homer Jones Lecture, Federal Reserve Bank of St. Louis, 2013.
Fiftieth Anniversary Award of Scholarship, University of Central Florida, 2013.
Franklin Delano Roosevelt Distinguished Service Award, Greater New York Council, Boy Scouts of America, 2012.
Bloomberg Markets, 50 Most Influential Members of the Global Financial Community, 2012.
National Association of Corporate Directors, Directorship 100: People to Watch, 2011.
Joint American Economic Association/American Finance Association Distinguished Speaker, 2008.
Cairncross Lecture, University of Oxford, 2007.
Fellow of the National Association of Business Economists, 2005.
William F. Butler Memorial Award, New York Association of Business Economists Award, 2005.
Exceptional Service Award, The White House, 2002.
Michelle Akers Award for Distinguished Service, University of Central Florida, 2001.
Alumni Hall of Fame, University of Central Florida, 2000.
Best Paper Award for Corporate Finance, Western Finance Association, 1998.
Exceptional Service Award, U.S. Department of the Treasury, 1992.
Distinguished Alumnus Award, University of Central Florida, 1991.
John M. Olin Fellowship, National Bureau of Economic Research, 1987-1988.

APPENDIX A

Teaching Commendations, Graduate School of Business, Columbia University.

Northwestern University Associated Student Government Teaching Awards, announced in 1985, 1986, and 1987. Graduate

Distinctions: National Science Foundation Fellowship, Alfred P. Sloan Foundation Fellowship.

Undergraduate Distinctions: National Merit Scholarship, National Society of Professional Engineers Award, Florida Society of Professional Engineers Award, National Council of Teachers of English Award, Omicron Delta Kappa, Financial Management Association Honor Society.

POSITIONS HELD

2019-present	Dean Emeritus, Graduate School of Business, Columbia University
2019	Dean, Graduate School of Business, Columbia University
2019-present	Academic Director, Chazen Institute for Global Business, Graduate School of Business, Columbia University
2019-present	Co-Director, Richman Center for Law, Business, and Public Policy
1994-present	Russell L. Carson Professor of Economics and Finance, Graduate School of Business, Columbia University
1997-present	Professor of Economics, Faculty of Arts and Sciences, Columbia University
present	Co-Chair, Task Force on Financial Stability, Brookings Institution
2017-present	Co-Chair, Aspen Institute Future of Work Initiative National Advisory Council
2017-present	Member, Aspen Institute Economic Strategy Group
2007-2017	Panel of Economic Advisors, Federal Reserve Bank of New York (also 1993-2001)
2012	Featured commentator, <i>Nightly Business Report</i>
2003-2010	Featured commentator, <i>Marketplace</i>
2003-present	Visiting Scholar American Enterprise Institute (also 1995-2001)
2004	Co-Director, Columbia Business School Entrepreneurship Program
2005	Viewpoint Columnist, <i>Business Week</i>
2004-2006	Member, Panel of Economic Advisors, Congressional Budget Office
2003	Chairman, President's Council of Economic Advisers
2001-2003	Chairman, Economic Policy Committee, Organization for Economic Cooperation and Development
2003	Member, White House National Economic Council and National Security Council
2001-2003	Member, President's Council on Science and Technology
1997-1998	Visiting Professor of Business Administration, Harvard Business School
1995-2001	Visiting Scholar and Director of Tax Policy Program, American Enterprise Institute
1997	Senior Vice Dean, Graduate School of Business, Columbia University
1994	MCI Fellow, American Council for Capital Formation
1994	John M. Olin Visiting Professor, Center for the Study of Economy and the State, University of Chicago

APPENDIX A

1991-1993	Deputy Assistant Secretary (Tax Analysis), U.S. Department of the Treasury
1988-present	Professor of Economics and Finance, Graduate School of Business, Columbia University 1987-
1988	John M. Olin Fellow in residence at the National Bureau of Economic Research
1983-1988	Assistant Professor of Economics, Northwestern University, with half-time research appointment in the Center for Urban Affairs and Policy Research
1985	Visiting Scholar, Center for Business and Government, John F. Kennedy School of Government, Harvard University
1981-1983	Teaching Fellow (Department of Economics) and Resident Tutor in Economics (Dunster House), Harvard University

DIRECTORSHIPS

2021-present	Total SE
2019-present	MetLife (Chairman of the Board)
2007-present	MetLife (Independent director)
2004-present	BlackRock Fixed Income Board
2004-2020	ADP, Inc.
2004-2014	KKR Financial Corporation (Lead independent director)
2004-2008	Duke Realty Corporation
2006-2008	Capmark Financial Corporation; Information Services Group
2004-2006	Dex Media/R.H. Donnelley
2003-2005	ITU Ventures
2000-2001	Angel Society, LLC; Information Technology University, LLC

CONSULTING OR ADVISORY RELATIONSHIPS

2019-present	Growth Catalyst Partners
2016-present	55 Capital
2014-present	Fiscal Note
2007-present	Consulting or Speaking Engagements at Some Point: U.S. Department of Justice, Internal Revenue Service, 1-800-Flowers, Abbott, Access Midstream, Advance Auto Parts, Advent, Airgas, Alibaba, AlixPartners, Alternative Investment Group, Amazon, American Century, America's Health Insurance Plans, AMVAC, ApexBrasil, Association for Corporate Growth, Atlantic Point, AXA, Banco Bradesco, Bank of America, Bank of New York Mellon, Barclays Services Corporation, BBVA Compass, BGC, BNP Paribas, Brevan Howard, Calamos, Capital Research, Carlyle Group, Christofferson Robb, CIBC, Citigroup, Commonfund, Compagnie Financiere Tradition, ComScore, Coty, Credit Suisse, Dell, Deutsche Bank, FactSet, Donald Fewer, Fidelity, Franklin Resources, Freddie Mac, Gartner, Goldman Sachs, Good, Government of Greece, Great-West, Sue Ann Hamm, Hanson, The Hartford, HFF, Huntsman Corp., Insurance Information Institute, Intel, Investcorp, Jarden, JP Morgan Chase, Key Bank, Kosmos, Lincoln National, Loews, Lotte, LVMH, Macquarie, Mastercard, Medtronic, Microsoft, Morgan Stanley, Mylan, NAI, NAREIT, NASCAR, National Rural Utilities Cooperative Finance Corporation, Nationwide, Adam Neumann, New York Bankers Association, NextEra, NMS Group, Ocwen, Oracle, Panera, Patriarch, Pension Real Estate Association, Pershing Square, PNC, Principal Management Corporation, Prium, Promontory, Rabobank, Real Estate Roundtable, Related Properties, Reynolds American, Rio Tinto, Royal Bank of Canada, Royal Bank of Scotland, Rural/Metro, Samsung, SCE&G, Steven Scott, Sears, SIG, Sinclair, Solera, SunTrust, Telia Sonera, Tesco, Trust Company of the West, Tullett Prebon, Visa, Walter Energy, William Walters, Wells Fargo, Wilmington Trust
2005-2009	Arcapita
2005-2010	Nomura Holdings America
2008	Laurus Funds
2005-2008	Chart Venture Partners
2003-2009	Ripplewood Holdings

APPENDIX A**POSTS IN NON-PROFIT ORGANIZATIONS**

2021-present	Trustee, Fifth Avenue Presbyterian Church, New York
2020-present	Member, Board of Directors, Resources for the Future
2019-present	Member, Grant Advisory Committee, Smith Richardson Foundation
2019-present	Member, Task Force on Inclusive Capitalism
2019-present	Co-Chair, Financial Stability Task Force
2006-present	Co-Chair, Committee on Capital Markets Regulation
2003-present	Member, Manhattan District Council Board, Boy Scouts of America
2012-present	Trustee, Committee for Economic Development
2004-2019	Member, Advisory Board, National Center on Addiction and Substance Abuse
2020	Trustee, Fifth Avenue Presbyterian Church, New York
2012-2015	Trustee, Fifth Avenue Presbyterian Church, New York
2010-2011	Co-Chair, The Study Group on Corporate Boards
2011	Elder, Fifth Avenue Presbyterian Church
2008-2010	Chairman, Economic Club of New York
2006-2008	Member, Board of Directors, Resources for the Future
2003-2008	Trustee, Tax Foundation
2004-2010	Trustee, Economic Club of New York
2004-2007	Trustee, Fifth Avenue Presbyterian Church, New York

PROFESSIONAL ACTIVITIES

1987-present	Research Associate, National Bureau of Economic Research (Monetary Economics, Corporate Finance, Public Economics, Economic Fluctuations, Industrial Organization)
2007-present	Life Member, Council on Foreign Relations
2017-2018	Member, U.S.-China Economic and Security Review Commission
	Member, Committee of Visitors, National Science Foundation
2000	Panelist, Graduate Fellowship Selection Committee, National Science Foundation
	Director, Project on Nonprofit Organizations, National Bureau of Economic Research
2001	Member, COSSA-Liaison Committee, American Economic Association
1993-2001	Board of Advisors, Institutional Investor Project, School of Law, Columbia University
1999	Member, Board of Academic Consultants, American Law Institute
1997	Member, Grants Panel for Integrative Graduate Education and Research Training Program, National Science Foundation
1994-1996	Member, Economics Grants Panel, National Science Foundation
1993-1996	Member, Federal Taxation and Finance Committee, National Tax Association
1990-1995	Co-organized research program on International Aspects of Taxation at the National Bureau of Economic Research, Cambridge, Massachusetts
1995	Member, Program Committee, American Economic Association Meeting
1987	Faculty Research Fellow, National Bureau of Economic Research
1983-1986	Adjunct Faculty Research Fellow, Energy and Environmental Policy Center, John F. Kennedy School of Government, Harvard University, Cambridge, Massachusetts

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1986, 1988, 1994	Member of the Brookings Panel on Economic Activity 1985,
1987	Special guest of the Brookings Panel on Economic Activity
1990-1991	Organized research program on Environmental Economics and Public Policy at the National Bureau of Economic Research, Cambridge, Massachusetts
1988-1990	Co-organized research program on Dynamic Models of Firms and Industries at the National Bureau of Economic Research, Cambridge, Massachusetts
1985-1989	Organized research program and workshops on contracting in financial markets at the Summer Institute, National Bureau of Economic Research, Cambridge, Massachusetts
1988	Organized Economic Fluctuations program on Industrial Economics and Macroeconomics, National Bureau of Economic Research, Stanford, California
1986-1988	Organized research program and workshop on links between macroeconomics and industrial organization at the Summer Institute, National Bureau of Economic Research, Cambridge, Massachusetts
1991	Member, Program Committee, Econometric Society Winter Meetings
1982-1983	Member, Energy Modeling Forum VII Study Group, Stanford University, Stanford, California 1981-
present	Consultant on research projects with private corporations and government and international agencies, including the Internal Revenue Service, Social Security Administration, U.S. Department of Energy, U.S. Department of State, U.S. Department of Treasury, and U.S. International Trade Commission; National Science Foundation; The World Bank; Board of Governors of the Federal Reserve System; Federal Reserve Bank of New York; Congressional Budget Office
Member:	American Economic Association, American Finance Association, Association for Public Policy and Management, Econometric Society, International Association of Energy Economists, National Tax Association, the Royal Economic Society, and the Institute for Management Science
Referee:	<i>American Economic Review; Canadian Journal of Economics; Columbia Journal of World Business; Econometrica; Economic Journal; Energy Economics; Energy Journal; International Finance; International Tax and Public Finance; Journal of Business; Journal of Business and Economic Statistics; Journal of Economic History; Journal of Economic Literature; Journal of Finance; Journal of Financial Economics; Journal of Financial Intermediation; Journal of Financial and Quantitative Analysis, Journal of Financial Services Research; Journal of Industrial Economics; Journal of International Money and Finance; Journal of Law and Economics; Journal of Macroeconomics; Journal of Money, Credit, and Banking; Journal of Monetary Economics; Journal of Political Economy; Journal of Public Economics; Journal of Regulatory Economics; Journal of Small Business Finance; Management Science; National Tax Journal; Quarterly Journal of Economics; Quarterly Review of Economics and Finance; RAND Journal of Economics; Review of Economic Dynamics; Review of Economic Studies; Review of Economics and Statistics; Review of Financial Economics; Scandinavian Journal of Economics; Southern Economic Journal; National Science Foundation; C.V. Starr Center for Applied Economics (New York University); Addison-Wesley Publishing Company; Ballinger Press; Cambridge University Press; Harvard Business School Press; MIT Press; W.W. Norton; Oxford University Press</i>
Associate Editor:	<i>Journal of Applied Corporate Finance</i>
Former Associate Editor:	<i>Federal Reserve Bank of New York Economic Policy Review; International Finance; International Tax and Public Finance; Journal of Industrial Economics; Journal of Macroeconomics; Journal of Small Business Finance; National Tax Journal</i>

PUBLICATIONS AND PAPERS**Edited Volumes**

Transition Costs of Fundamental Tax Reform (with K.A. Hassett), Washington, DC: AEI Press, 2001.

Inequality and Tax Policy (with K.A. Hassett), Washington, DC: AEI Press, 2001.

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Effects of Taxation on Multinational Corporations (with M. Feldstein and J.R. Hines), Chicago: University of Chicago Press, 1995.

Taxing Multinational Corporations (with M. Feldstein and J. R. Hines), Chicago: University of Chicago Press, 1995. *Studies in International Taxation* (with A. Giovannini and J. B. Slemrod), Chicago: University of Chicago Press, 1993. *Financial Markets and Financial Crises*, Chicago: University of Chicago Press, 1991.

Asymmetric Information, Corporate Finance, and Investment, Chicago: University of Chicago Press, 1990.

Books

Balance (with T. Kane), Simon and Schuster, 2013.

Healthy, Wealthy, and Wise (with J.F. Cogan and D.P. Kessler), Hoover Institution Press and AEI Press, 1st ed., 2005; 2nd ed., 2011.

Seeds of Destruction (with P. Navarro), FT Publishing, 2010.

The Mutual Fund Industry: Competition and Investor Welfare (with M.F. Koehn, S.I. Ornstein, M. Van Audenrode, and J. Royer), New York: Columbia Business School Publishing, 2010.

The Aid Trap: Hard Truths About Ending Poverty (with W. Duggan), Columbia Business School Publishing, 2009.

Textbooks

Principles of Economics (with A.P. O'Brien), Pearson Prentice Hall, 1st ed., 2006; 2nd ed., 2008; 3rd ed., 2010; 4th ed., 2013; 5th ed., 2015; 6th ed., 2017; 7th ed., 2019; 8th ed., 2021.

Money, Banking, and the Financial System (with A.P. O'Brien), Pearson Prentice Hall, 1st ed., 2012; 2nd ed., 2013; 3rd ed., 2016; 4th ed., 2021.

Macroeconomics (with A.P. O'Brien and M. Rafferty), Pearson Prentice Hall, 1st ed., 2012; 2nd ed., 2014; 3rd ed., 2018.

Money, the Financial System, and the Economy, Reading: Addison-Wesley Publishing Company, 1st ed., 1994; 2nd ed., 1997; 3rd ed., 2000; 4th ed., 2002; 5th ed., 2004; 6th ed., 2007.

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Articles

“Has the Paycheck Protection Program Succeeded?” (with M. Strain), *Brookings Papers on Economic Activity* (Fall 2020): forthcoming.

“The Elasticity of Taxable Income in the Presence of Intertemporal Income Shifting” (with A. Gorry and A. Mathur), *National Tax Journal*, forthcoming.

“Establishing Credible Rules for Fed Emergency Lending” (with C. Calomiris, D. Holtz-Eakin, A.H. Meltzer, and H.S. Scott), *Journal of Financial Economic Policy* 8 (2017): 260-267.

“The Response of Deferred Executive Compensation to Changes in Tax Rates” (with A. Gorry, K.A. Hassett, and A. Mathur), *Journal of Public Economics* 151 (2017): 28-40.

“Country Characteristics and the Incidence of Capital Income Taxation on Wages: An Empirical Assessment” (with C. Azemar), *Canadian Journal of Economics* 48 (2015): 1762-1802.

“Taxing Capital’s Gains: Capital’s Ideas and Tax Policy in the Twenty-First Century”, *National Tax Journal*, 68 (2015): 409-424.

Reforming the Tax Preference for Employer Health Insurance” (with J. Bankman, J.F. Cogan, and D.P. Kessler), *Tax Policy and the Economy*, volume 26, Cambridge, University of Chicago Press, 2012.

“The Effect of Tax Preferences on Health Spending” (with J.F. Cogan and D.P. Kessler), *National Tax Journal*, 64 (2011): 795-816.

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“The Effect of Massachusetts’ Health Reform on Employer-Sponsored Insurance Premiums” (with J.F. Cogan and D.P.Kessler), *Forum for Health Economics and Policy*, 2010.

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“The Economic Effects of Federal Participation in Terrorism Risk” (with B. Deal and P. Hess), *Risk Management and Insurance Review* 8 (2005): 177-209.

“The Effects of Progressive Income Taxation on Job Turnover” (with W.M. Gentry), *Journal of Public Economics* 88 (September 2004): 2301-2322.

“Business, Knowledge, and Global Growth”, *Capitalism and Society*, 1 (2006).

“Precautionary Savings and the Governance of Nonprofit Organizations” (with R. Fisman), *Journal of Public Economics*, 2005.

“Government Debt and Interest Rates” (with E. Engen), in M. Gertler and K. Rogoff, *NBER Macroeconomics Annual 2004*, Cambridge: MIT Press, 2005.

“Entrepreneurship and Household Saving” (with W.M. Gentry), *Advances in Economic Analysis and Policy*, 4 (2004).

“Taxing Multinationals” (with M. Devereux), *International Taxation and Public Finance* 10(2003):469-487.

“The Effect of the Tax Reform Act of 1986 on the Location of Assets in Financial Services Firms” (with R. Altshuler), *Journal of Public Economics* 87 (January 2003):109-127.

“The Role of Nonprofit Endowments” (with R. Fisman), in E. Glaeser, ed., *The Governance of Not-For-Profit Organizations*, Chicago: University of Chicago Press, 2003.

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“Tax Policy and Entrepreneurial Entry” (with W.M. Gentry), *American Economic Review* 90 (May 2000): 283-287. “Understanding the Determinants of Managerial Ownership and the Link Between Ownership and Performance” (with C.P. Himmelberg and D. Palia), *Journal of Financial Economics* 53 (1999): 353-384.

“A Reexamination of the Conglomerate Merger Wave in the 1960s” (with D. Palia), *Journal of Finance* 54 (June 1999):1131-1152.

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“Capital-Market Imperfections and Investment,” *Journal of Economic Literature* 36 (March 1998): 193-225.

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- "Assessing the Effectiveness of Saving Incentives" (with J. Skinner), *Journal of Economic Perspectives* 10 (Fall 1996): 73-90.
- "The Political Economy of Branching Restrictions and Deposit Insurance: A Model of Monopolistic Competition Among Small and Large Banks" (with N. Economides and D. Palia), *Journal of Law and Economics* 39 (October 1996): 667-704.
- "Tax Reforms and Investment: A Cross-Country Comparison" (with J.G. Cummins and K.A. Hassett), *Journal of Public Economics* 62 (1996): 237-273.
- "Benefits of Control, Managerial Ownership, and the Stock Returns of Acquiring Firms" (with D. Palia), *RAND Journal of Economics* 26 (Winter 1995): 782-792.
- "Executive Pay and Performance: Evidence from the U.S. Banking Industry" (with D. Palia), *Journal of Financial Economics* 39 (1995): 105-130.
- "Tax Policy, Internal Finance, and Investment: Evidence from the Undistributed Profits Tax of 1936-1937" (with C. Calomiris), *Journal of Business* 68 (October 1995): 443-482.
- "A Reconsideration of Investment Behavior Using Tax Reforms as Natural Experiments" (with J.G. Cummins and K.A. Hassett), *Brookings Papers on Economic Activity* (1994:2): 1-59.
- "Precautionary Saving and Social Insurance" (with J. Skinner and S. Zeldes), *Journal of Political Economy* 105 (April 1995): 360-399.
- "Expanding the Life-Cycle Model: Precautionary Saving and Public Policy" (with J. Skinner and S. Zeldes), *American Economic Review* 84 (May 1994): 174-179.
- "The Tax Sensitivity of Foreign Direct Investment: Evidence from Firm-Level Panel Data" (with J. Cummins), in M. Feldstein, J.R. Hines, and R.G. Hubbard, eds., *Effects of Taxation on Multinational Corporations*, Chicago: University of Chicago Press, 1995.
- "International Adjustment Under the Classical Gold Standard: Evidence for the U.S. and Britain, 1879- 1914" (with C. Calomiris), in T. Bauoumi, B. Eichengreen, and M. Taylor, eds., *Modern Perspectives on the Gold Standard*, Cambridge: Cambridge University Press, 1995.
- "Internal Finance and Firm-Level Investment" (with A. Kashyap and T. Whited), *Journal of Money, Credit, and Banking* 27 (August 1995): 683-701.
- "Do Tax Reforms Affect Investment?" (with J.G. Cummins and K.A. Hassett), in J.M. Poterba, ed., *Tax Policy and the Economy*, vol. 9, Cambridge: MIT Press, 1995.
- "The Importance of Precautionary Motives for Explaining Individual and Aggregate Saving" (with J. Skinner and S. Zeldes), *Carnegie-Rochester Conference Series on Public Policy* 40 (June 1994): 59-126.
- "Corporate Financial Policy, Taxation, and Macroeconomic Risk" (with M. Gertler), *RAND Journal of Economics* 24 (Summer 1993): 286-303.
- "Internal Net Worth and the Investment Process: An Application to U.S. Agriculture" (with A. Kashyap), *Journal of Political Economy* 100 (June 1992): 506-534.
- "Long-Term Contracting and Multiple-Price Systems" (with R. Weiner), *Journal of Business* 65 (April 1992): 177-198.
- "Efficient Contracting and Market Power: Evidence from the U.S. Natural Gas Industry" (with R. Weiner), *Journal of Law and Economics* 34 (April 1991): 25-67.
- "Interest Rate Differentials, Credit Constraints, and Investment Fluctuations" (with M. Gertler and A. Kashyap), in R.G. Hubbard, ed., *Financial Markets and Financial Crises*, Chicago: University of Chicago Press, 1991.
- "Taxation, Corporate Capital Structure, and Financial Distress" (with M. Gertler), in L.H. Summers, ed., *Tax Policy and the Economy*, volume 4, Cambridge: MIT Press, 1990.

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- "Firm Heterogeneity, Internal Finance, and Credit Rationing" (with C. Calomiris), *Economic Journal* 100 (March 1990):90-104.
- "Coming Home to America: Dividend Repatriations in U.S. Multinationals" (with J. Hines), in A. Razin and J.B. Slemrod,eds., *Taxation in the Global Economy*, Chicago: University of Chicago Press, 1990.
- "Price Flexibility, Credit Availability, and Economic Fluctuations: Evidence from the U.S., 1894-1909" (with C. Calomiris), *Quarterly Journal of Economics* 104 (August 1989): 429-452.
- "Financial Factors in Business Fluctuations" (with M. Gertler), in Federal Reserve Bank of Kansas City, *Financial Market Volatility--Causes, Consequences, and Policy Responses*, 1989.
- "Contracting and Price Adjustment in Commodity Markets: Evidence from Copper and Oil" (with R. Weiner), *Review of Economics and Statistics* 71 (February 1989): 80-89.
- "Financing Constraints and Corporate Investment" (with S. Fazzari and B.C. Petersen), *Brookings Papers on Economic Activity*, 1988:1: 141-195; Reprinted in Z.J. Acs, ed., *Small Firms and Economic Growth*, Cheltenham, U.K.: Edward Elgar Publishing Ltd., 1995.
- "Investment, Financing Decisions, and Tax Policy" (with S. Fazzari and B.C. Petersen), *American Economic Review* 78(May 1988): 200-205.
- "Market Structure and Cyclical Fluctuations in U.S. Manufacturing" (with I. Domowitz and B.C. Petersen), *Review of Economics and Statistics* 70 (February 1988): 55-66.
- "Capital Market Imperfections and Tax Policy Analysis in the Life-Cycle Model" (with K. Judd), *Annales d' Economie et de Statistique* 9 (January-March 1988): 111-139.
- "Social Security and Individual Welfare: Precautionary Saving, Borrowing Constraints, and the Payroll Tax" (with K.Judd), *American Economic Review* 77 (September 1987): 630-646.
- "Oligopoly Supergames: Some Empirical Evidence on Prices and Margins" (with I. Domowitz and B.C. Petersen), *Journal of Industrial Economics* 36 (June 1987): 379-398.
- "Uncertain Lifetimes, Pensions, and Individual Saving," in Zvi Bodie, John B. Shoven, and David A. Wise (eds.), *Issues in Pension Economics*, Chicago: University of Chicago Press, 1987, pp. 175-205.
- "The Farm Debt Crisis and Public Policy" (with C. Calomiris and J. Stock), *Brookings Papers on Economic Activity*, 1986:2: 441-479.
- "Liquidity Constraints, Fiscal Policy, and Consumption" (with K. Judd), *Brookings Papers on Economic Activity*, 1986:1:1-50.
- "The Intertemporal Stability of the Concentration-Margins Relationship" (with I. Domowitz and B.C. Petersen), *Journal of Industrial Economics* 35 (September 1986): 13-34.
- "Pension Wealth and Individual Saving: Some New Evidence," *Journal of Money, Credit, and Banking* 18 (May 1986):167-178.
- "Supply Shocks and Price Adjustment in the World Oil Market," *Quarterly Journal of Economics* 101 (February 1986): 85-102.
- "Regulation and Long-Term Contracts in U.S. Natural Gas Markets" (with R. Weiner), *Journal of Industrial Economics* 35 (September 1986): 51-71.
- "Business Cycles and the Relationship Between Concentration and Price-Cost Margins" (with I. Domowitz and B.C.Petersen), *RAND Journal of Economics* 17 (Spring 1986): 1-17.
- "Inventory Optimization in the U.S. Petroleum Industry: Empirical Analysis and Implications for Energy Emergency Policy" (with R. Weiner), *Management Science* 32 (July 1986): 773-790.
- "Social Security, Liquidity Constraints, and Pre-Retirement Consumption," *Southern Economic Journal* 51 (October 1985): 471-484.
- "Personal Taxation, Pension Wealth, and Portfolio Composition," *Review of Economics and Statistics* 67 (February 1985): 53-60.
- "Industry Margins and the Business Cycle: Some New Microeconomic Evidence" (with I. Domowitz and B.C. Petersen), *Economics Letters* 19 (1985): 73-77.

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"Oil Supply Shocks and International Policy Coordination" (with R. Weiner), *European Economic Review* 30 (February 1986): 91-106.

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"If Congress Must Have Revenue Tests, Make Them Backward-Looking" (with M. Strain), *AEI Ideas*, 2020.

"Building the Car While Driving It: Suggestions for Reforming the Paycheck Protection Program" (with M. Strain), *AEI Ideas*, 2020.

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"Comment" on D. Elmendorf, "'Dynamic Scoring': Why and How to Include Macroeconomic Effects in Budget Estimates for Legislative Proposals," *Brookings Papers on Economic Activity* (Fall 2015): 134-138.

"Comment" on A.J. Auerbach, "The Choice Between Income and Consumption Tax: A Primer," in A.J. Auerbach and D. Shaviro, eds., *Key Issues in Public Finance: Essays In Honor of David Bradford*, forthcoming.

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"Comment" on D.H. Moss, "Courting Disaster?: The Transformation of Federal Disaster Policy Since 1903," in K.A. Froot, ed., *The Financing of Catastrophic Risk*, Chicago: University of Chicago Press, 1999.

"Market for Corporate Control" (with D. Palia), in P. Newman, ed., *The New Palgrave Dictionary of Economics and the Law*, London: Macmillan, 1998.

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"Introduction," in M. Feldstein, J.R. Hines, and R.G. Hubbard, eds., *Effects of Taxation on Multinational Corporations*, Chicago: University of Chicago Press, 1995.

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"Comment" on Alberto Giovannini and James R. Hines, Jr., "Capital Flight and Tax Competition: Are There Viable Solutions to Both Problems?," in A. Giovannini and C. Mayer, eds., *European Financial Integration*, London: Centre for Economic Policy Research, 1990.

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"Comment" on James M. Poterba, "Tax Policy and Corporate Saving," *Brookings Papers on Economic Activity*, 1987:2.

"Comment" on Robert E. Hall, "Market Structure and Macro Fluctuations," *Brookings Papers on Economic Activity*, 1986:2.

"Comment" on Alan S. Blinder and Angus Deaton, "The Time-Series Consumption Function Revisited," *Brookings Papers on Economic Activity*, 1985:2.

"Comment" on Benjamin S. Friedman and Mark Warshawsky, "The Cost of Annuities: Implications for Saving Behavior and Bequests," in Zvi Bodie, John Shoven, and David Wise (eds.), *Pensions in the U.S. Economy*, Chicago: University of Chicago Press, 1987.

"Energy Security: Book Reviews," *Energy Journal* 4 (April 1983).

"When the Oil Spigot is Suddenly Turned Off: Some Further Thoughts" (with R. Weiner), *Journal of Policy Analysis and Management* 2 (Winter 1983).

Submitted Papers and Working Papers

"Tax Policy and Wage Growth" (with W. M. Gentry), Working Paper, Columbia University, 2001.

"Investor Protection, Ownership, and Investment" (with C.P. Himmelberg and I. Love), Working Paper, Columbia University, 2000.

"Incentive Pay and the Market for CEOs: An Analysis of Pay-for-Performance Sensitivity" (with C.P. Himmelberg), Working Paper, Columbia University, 2001.

"Noncontractible Quality and Organizational Form in the U.S. Hospital Industry," (with K.A. Hassett), Working Paper, Columbia University, 1999.

"Entrepreneurship and Household Saving," (with W. M. Gentry), Working Paper, Columbia University, 2001.

"Corporate Payouts and the Tax Price of Corporate Retentions: Evidence from the Undistributed Profits Tax of 1936-37" (with P. Reiss), Working Paper No. 3111, National Bureau of Economic Research, September 1989.

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"Market Structure, Durable Goods, and Cyclical Fluctuations in Markups" (with I. Domowitz and B. Petersen), Working Paper, Northwestern University, 1987.

"Finite Lifetimes, Borrowing Constraints, and Short-Run Fiscal Policy" (with K. Judd), Working Paper No. 2158, National Bureau of Economic Research, 1987.

GRANTS RECEIVED

"Corporate Board Study Group," Rockefeller Foundation, 2009.

"Institutional Investors, Boards of Directors, and Corporate Governance," Korn/Ferry, 1997.

"An Economic Analysis of Saving Incentives," Securities Industry Association, 1994, with Jonathan Skinner. "Securities Transactions Taxes: Tax Design, Revenue, and Policy Considerations," Catalyst Institute, 1993.

"Precautionary Saving in the U.S. Economy," Bradley Foundation, 1989-1990, with Jonathan Skinner and Stephen Zeldes.

"Taxation, Corporate Leverage, and Financial Distress," Garn Institute for Finance, 1989-1990.

"Precautionary Saving in a Dynamic Model of Consumption and Labor Supply," National Science Foundation (Economics Group SES-8707997), 1987-1989, with Jonathan Skinner and Stephen Zeldes.

"Industrial Behavior and the Business Cycle: A Panel Data Study of U.S. Manufacturing," National Science Foundation (Economics Group SES-8420152), 1985-1987, with Ian Domowitz and Bruce Petersen.

"Efficient Contracting and Market Power: Evidence from the U.S. Natural Gas Market," Transportation Center, Northwestern University, Summer 1985.

"Constructing a Panel Data Base for Studies of U.S. Manufacturing," University Research Grants Committee, Northwestern University, 1985-1986.

"Economic Analysis of Multiple-Price Systems: Theory and Application," National Science Foundation (Regulatory Analysis and Policy Group, SES-8408805), 1984-1985.

"Contracting and Price Adjustment in Product Markets," University Research Grants Committee, Northwestern University, 1983-1984.

PAPERS PRESENTED***University Seminars***

Bard College, University of Bergamo, Butler Community College, University of California (Berkeley), University of California (Los Angeles), University of California (San Diego), Carleton, University of Chicago, Columbia, University of Dubuque, Emory, University of Florida, University of Central Florida, Florida Atlantic University, George Washington, Georgetown, Georgia Southern University, Harvard, Hendrix College, University of Illinois, Indiana University, Johns Hopkins, Laval, Lehigh, University College (London), University of Kentucky, London School of Economics, MIT, University of Maryland, University of Miami, Miami University, University of Michigan, University of Minnesota, National Defense University, New York University, Northwestern, Oxford, University of Notre Dame, University of Pennsylvania, Princeton, Rice, University of Rochester, Stanford, Syracuse, University of Miami, University of Texas, Texas Tech University, Tufts, University of Virginia, University of Wisconsin (Madison), University of Wisconsin (Milwaukee), Virginia Tech, and Yale.

Conference Papers Presented

American Council for Capital Formation, Washington, DC, June 1994.

American Economic Association, San Diego, 2020; Atlanta, 2019; Philadelphia, 2018; Chicago, 2017; San Francisco, 2016; Boston, 2015; Philadelphia, 2014; San Diego, 2013; Chicago, 2012; New Orleans, 2008; Chicago, 2007; Boston, 2006; Philadelphia, 2005; San Diego, January 2004; Atlanta, January 2002; New Orleans, January 2001; Boston, January 2000; New York, January 1999; New Orleans, January 1997; San Francisco, January 1996; Washington, D.C., January 1995; Boston, January 1994; Anaheim, January 1993; Washington, D.C., December 1990; Atlanta, December 1989; New York, December 1988; Chicago, December 1987; New Orleans, December 1985; Dallas, December 1984.

American Enterprise Institute, Conference on Economic Policy, 2019; Conference on Corporate Taxation, 2016; Conference on Private Equity, 2007; Conference on Corporate Taxation, 2006; Conference on Multinational Corporations, 2004, 2003; Conference on Multinational Corporations, February 1999; Conference on Income Inequality, January 1999; Conference on Transition Costs of

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Fundamental Tax Reform, November 1998; Conference Series on Social Insurance Reform, 1997-1998; Conference Series on Fundamental Tax Reform, 1995-1998; Conference on Distributional Analysis of Tax Policies, Washington, D.C., December 1993.

American Finance Association, New Orleans, January 2008; San Diego, January 2004; Boston, January 2000; New York, January 1999; New Orleans, January 1997.

Association of Environmental and Resource Economists, Dallas, December 1984; San Francisco, December 1983. Association of Public Policy Analysis and Management, New Orleans, October 1984; Philadelphia, October 1983. Bipartisan Commission on Entitlement and Tax Reform, Washington, DC, June 1994.

Brookings Panel on Economic Activity, September 2020, September 2015, September 1994, April 1988, September 1987, September 1986, April 1986, September 1985.

Centre for Economic Policy Research Conference on Capital Taxation and European Integration, London, September 1989.

Conference on International Perspectives on the Macroeconomic and Microeconomic Implications of Financing Constraints, Centre for Economic Policy Research, Bergamo, Italy, October 1994.

Congressional Research Service Conference for New Members of Congress, Williamsburg, January 1999. Congressional Research Service Conference for Members of the Ways and Means Committee, Baltimore, October 2001. Deutsche Bundesbank Conference on Investing for the Future, Frankfurt, Germany, May 2000.

Eastern Economic Association, Boston, March 1988; Boston, February 1983.

Econometric Society, New Orleans, January 1997; San Francisco, January 1996; Washington, D.C., January 1995; New Orleans, January 1992; Washington, December 1990; Atlanta, December 1989; New York, December 1988; Chicago, December 1987; New Orleans, December 1986; New York, December 1985; Boston, August 1985; Madrid, September 1984; San Francisco, December 1983; Pisa, August 1983.

Energy Modeling Forum, Stanford University, August 1983; February 1983; August 1982. European Commission, Conference on Taxation of Financial Instruments, Milan, June 1998. European Institute for Japanese Studies, Tokyo, September 2002; March 2002.

Federal Reserve Bank of Boston, Annual Economic Conference, North Falmouth, Massachusetts, June 1995.

Federal Reserve Bank of Kansas City Symposium on "Financial Market Volatility – Causes, Consequences, and Policy Responses," Jackson Hole, Wyoming, August 1988; Comment of Rogoff, August 2004.

Federal Reserve Bank of New York, Conference on Consolidation of the Financial Services Industry, New York, March 1998.

Federal Reserve Bank of Philadelphia Conference on Economic Policy, Philadelphia, November 2007; November 2001. Federal Reserve Bank of St. Louis, Conference on Economic Policy, St. Louis, October 1994.

Harvard Law School U. S.-Japan Symposium, Tokyo, December 2003; Washington, D. C., September 2002; Tokyo, December 2001.

Hoover Institution, Conference on Fundamental Tax Reform, December 1995. The

Institute of Gas Technology, Washington, DC, May 1982.

The Institute of Management Science/Operations Research Society of America, Orlando, November 1983; Chicago, April 1983.

International Association of Energy Economists, Boston, November 1986; Philadelphia, December 1985; Bonn, June 1985; San Francisco, November 1984; Washington, DC, June 1983; Denver, November 1982; Cambridge (England), June 1982; Houston, November 1981.

International Conference on the Life Cycle Model, Paris, June 1986.

International Institute of Public Finance, Innsbruck, August 1984.

International Seminar on Public Economics, Amsterdam, April 1997.

National Academy of Sciences, February 1997.

National Association of Business Economists, Washington, March 2015; Orlando, September 2003; Washington, September 2002; New York, September 2001; Boston, September 1996; Dallas, September 1992; New Orleans, October 1987.

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National Bureau of Economic Research - IMEMO Conference on the American Economy, Moscow, August 1989.

National Bureau of Economic Research Summer Institute, August 2014; August 2012; August 2009; August 2006; August 2005; July-August 2003; July-August 2000; July-August 1999; July-August 1998; August 1997; July 1995; July 1994; July 1993; August 1992; July-August 1991; July-August 1990; July-August 1989; July-August 1988; July-August 1987; July-August 1986; July 1985; July 1984; July 1983.

National Bureau of Economic Research Conference on Asymmetric Information, Corporate Finance, and Investment, Cambridge, May 1989.

National Bureau of Economic Research Conference on Chinese Economic Reform, Shanghai, China, July 2000. National

Bureau of Economic Research Conference on Financial Crises, Key Biscayne, March 1990.

National Bureau of Economic Research Conference on Government Expenditure Programs, Cambridge, November 1986.

National Bureau of Economic Research Conference on Indian Economic Reform, Rajasthan, India, December 1999.

National Bureau of Economic Research Conference on Innovation Policy, Washington, DC, April 2004, April 2003.

National Bureau of Economic Research Conference on International Taxation, Washington, DC, April 1994; Cambridge, January 1994; New York, September 1991; Nassau, Bahamas, February 1989.

National Bureau of Economic Research, Macroeconomic Annual Conference, Cambridge, MA, April 2004.

National Bureau of Economic Research Conference on Macroeconomics and Industrial Organization, Cambridge, July 1988; Cambridge, July 1987; Cambridge, July 1986; Chicago, November 1985.

National Bureau of Economic Research Conference on Nonprofit Organizations, Cheeca Lodge, January 2002; Cambridge, October 2001.

National Bureau of Economic Research Conference on Pensions, Baltimore, March 1985; San Diego, April 1984. National

Bureau of Economic Research Conference on Productivity, March 1988; March 1987.

National Bureau of Economic Research Conference on Public Economics, Cambridge, April 1999, April 1994, April 1993, November 1991, April 1991, March 1988, November 1987, March 1987.

National Bureau of Economic Research Conference on Tax Policy and the Economy, Washington, DC, October 2001, November 1998, November 1996, November 1994, November 1991, November 1989.

National Bureau of Economic Research Trans-Atlantic Public Economics Seminar, London, May 2002; Gerzensee, May 2000; Turin, May 1994.

Organization for Economic Cooperation and Development, Economic Policy Committee Meeting, Paris, November 2002, April 2002, November 2001, April 2001.

National Tax Association/Tax Institute of America, Washington, DC, June 2000; Atlanta, October 1999; Arlington, May 1992; Seattle, October 1983.

Organization for Economic Cooperation and Development, Ministerial Meeting, Paris, May 2002, May 2001.

Princeton Center for Economic Policy Conference, October 2000, October 1995.

Sveriges Riksbank/Stockholm School of Economics Conference on Asset Markets and Monetary Policy, Stockholm, Sweden, June 2000.

U.S. House of Representatives, Budget Committee, June 2001.

U.S. House of Representatives, Committee on Ways and Means, Washington, DC, June 2006; June 2005; June 1999; April 1997, June 1996, July 1992.

U.S. Joint Economic Committee, Washington, DC, February 2003, October 2002, October 2001, May 2001.

U. S. Senate Committee on Banking, Housing, and Urban Affairs, Washington, DC, October 2001, May 2001.

U.S. Senate Committee on Budget, February 2003, September 2001.

U. S. Senate Committee on Commerce, Science, and Technology, July 2002.

U.S. Senate Committee on Finance, Washington, DC, February 2003, February 2002, February 1997, January 1995, January 1992, December 1981.

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ROBERT GLENN HUBBARD

Testimony as an expert witness 2017 - 2021

Huntsman International, LLC v. Albemarle Corporation, et al., American Arbitration Association, AAA Case No. 01-17-001-4588. Provided deposition testimony 2021.

In Re: WeWork Litigation, C.A. No. 2020-0258, in the Court of the Chancery of the State of Delaware. Provided deposition testimony 2021.

In Re: BGC Partners, Inc. Derivative Litigation, C.A. No. 2018-0722-AGB, in the Court of Chancery of the State of Delaware. Provided deposition testimony 2021.

BCIM Strategic Value Master Fund, LP v. HFF, Inc., a Delaware Corporation, C.A. No. 2019-0558-JTL, in the Court of Chancery of the State of Delaware. Provided deposition testimony 2021.

Bandera Master Fund LP, et al. v. Boardwalk Pipeline Partners, LP, et al., C.A. No. 2018-0372-JTL, In the Court of Chancery of the State of Delaware. Provided deposition testimony 2020. Provided trial testimony 2021.

In Re: Advance Auto Parts, Inc. Securities Litigation, Civil Action No. 1:18-cv-00212-RGA, In the United States District Court, District of Delaware. Provided deposition testimony 2020.

National ATM Council, Inc., et al. v. Visa Inc., et al., Case No. 1:11-cv-01803 in the United States District Court, District of Columbia. Provided deposition testimony 2020.

Lynne Bartron, et al. v. Visa Inc., et al., Case No. 1:11-cv-1831, Case No. 1:11-cv-1882 in the United States District Court, District of Columbia. Provided deposition testimony 2020.

Peter Burke, et al. v. Visa Inc., et al., Case No. 1:11-cv-1882 in the United States District Court, District of Columbia. Provided deposition testimony 2020.

Securities and Exchange Commission v. Rio Tinto PLC, Case No. 1:17-cv-07994 in the United States District Court, Southern District of New York. Provided deposition testimony 2020.

Forescout Technologies, Inc. v. Ferrari Group Holdings, L.P. and Ferrari Merger Sub, Inc., Case No. 2020-0385-SG, In the Court of Chancery of the State of Delaware. Provided deposition testimony 2020.

Medtronic, Inc. & Consolidated Subsidiaries v. Commissioner of Internal Revenue, Docket No. 6944-11, in the United States Tax Court. Provided deposition testimony 2020.

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ROBERT GLENN HUBBARD

Testimony as an expert witness 2017 - 2021

Brach Family Foundation Inc. v. AXA Equitable Life Insurance Company, Case no. 16-CV-740 (JMF), in the United States District Court, Southern District of New York. Provided deposition testimony 2019.

In Re: Appraisal of Capital Bank Financial Corp., C.A. No. 2018-0226-TMR, In the Court of Chancery of the State of Delaware. Provided deposition testimony 2019.

In Re Payment Card Interchange Fee and Merchant Discount Antitrust Litigation, Case No. 05-md-1720, in the United States District Court, Eastern District of New York. Provided deposition testimony 2019.

Jeffrey Laydon, on behalf of himself and all others similarly situated v. The Bank of Tokyo-Mitsubishi UFJ, Ltd., et al., Case No. 12-cv-3419, in the United States District Court, for the Southern District of New York. Provided deposition testimony 2019.

Oaktree Principal Fund V, LP, et al. v. Warburg Pincus LLC; et al., Case No. 2:15-cv-08574-PSG-MRW, in the United States District Court, Central District of California, Western Division. Provided deposition testimony 2019.

In re: Appraisal of Panera Bread Company, Case No. 2017-0593-MTZ, In the Court of Chancery of the State of Delaware. Provided deposition testimony 2019. Provided trial testimony 2019.

City of Pontiac General Employees' Retirement System v. Dell, et al., Case No. 1:15-c-00374-LY, in the United States District Court, Western District of Texas, Austin Division. Provided deposition testimony 2018.

Loreley Financing (Jersey) No 28, Limited v. Merrill Lynch, Pierce, Fenner & Smith, Inc., et al., Index No. 652732/2011, in the Superior Court of the State of New York, County of New York, Commercial Division. Provided deposition testimony 2018.

South Carolina Electric & Gas Company v. Swain E. Whitfield, et al., Case No. 3:18-cv-01795-JMC, In the United States District Court for the District of South Carolina, Columbia Division. Provided testimony 2018.

In re: Friends of the Earth and Sierra Club v. South Carolina Electric & Gas Company (SCE&G); In re: Request of the Office of Regulatory Staff for Rate Relief to SCE&G's Rates; In re: Joint Application and Petition of SCE&G and Dominion Energy, Inc., Docket Nos. 2017-207-E, 2017-305-E, and 2017-370-E, Before the Public Service Commission of South Carolina. Provided testimony in 2018.

American Vanguard Corporation v. United States of America, Civil Action No.: 16-694 C, in the United States Court of Federal Claims. Provided deposition testimony 2018.

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ROBERT GLENN HUBBARD

Testimony as an expert witness 2017 - 2021

Joan Obeslo, et al. v. Great-West Capital Management, LLC, et al., Civil Action No. 16-cv-230-CMA-MJW consolidated with No. 16-cv-01215 and No. 16-cv-03162, in the United States District Court, District of Colorado. Provided deposition testimony 2018. Provided trial testimony 2020.

In re: Appraisal of Jarden Corporation, Case No. 12456-VCS, In the Court of Chancery of the State of Delaware. Provided deposition testimony 2018. Provided trial testimony 2018.

Kortright Capital Partners LP, et al. v. Investcorp Investment Advisors Limited, Case No. 16cv7619, United States District Court, Southern District of New York. Provided deposition testimony 2018. Provided trial testimony 2019.

Syncora Guarantee Inc. v. Alinda Capital Partners LLC, American Roads LLC, Macquarie Securities (USA) Inc., and John S. Laxmi, Index No. 651258/2012, In the Supreme Court of the State of New York. Provided deposition testimony 2018.

Saul Chill and Sylvia Chill, for the use and benefit of the Calamos Growth Fund v. Calamos Advisors LLC and Calamos Financial Services LLC, Case No. 15 Civ: 1014 (ER), United States District Court, Southern District of New York. Provided deposition testimony 2017. Provided trial testimony 2018.

Broadway Gate Master Fund, Ltd., Pennant Master Fund LP, and Pennant Windward Master Fund, LP v. Ocwen Financial Corporation, et al., Civil Case 9:16-cv-80056, United States District Court, Southern District of Florida. Provided deposition testimony 2017.

In re: Allergan, Inc. Proxy Violation Securities Litigation, Case No. 8:14-cv-2004-DOC (KES), United States District Court, Central District of California, Southern District - Santa Ana. Provided deposition testimony 2017.

In the Matter of: Certain Integrated Circuits with Voltage Regulators and Products Containing Same, Investigation No. 337-TA-1024, United States International Trade Commission, Washington, D.C. Provided deposition testimony 2017.

In re: Appraisal of Solera Holdings, Inc., Case No. 12080-CB, In the Court of Chancery of the State of Delaware. Provided deposition testimony 2017. Provided trial testimony 2017.

In re: Good Technology Corporation Stockholder Litigation, C.A. No. 11580-VCL, In the Court of Chancery of the State of Delaware. Provided deposition testimony 2017.

Mylan Inc. & Subsidiaries, et al. v. Commissioner of Internal Revenue, Docket No. 16145-14, 27086-14, United States Tax Court, Washington, D.C. Provided deposition testimony 2017.

Abbott Laboratories v. Alere, Inc., C.A. No. 12963-VCG, In the Court of Chancery of the State of Delaware. Provided deposition testimony 2017.

In re: LIBOR-Based Financial Instruments Antitrust Litigation, MDL No. 2262, 11 Civ. 2613, United States District Court Southern District of New York. Provided deposition testimony 2017.

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ROBERT GLENN HUBBARD

Testimony as an expert witness 2017 - 2021

In the Matter of: Determination of Rates and Terms for Making and Distributing Phonorecords (Phonorecords III), Docket No. 16-CRB-0003-PR (2018-2022), Before the Copyright Royalty Board Library of Congress, Washington, D.C. Provided deposition testimony 2017. Provided trial testimony 2017.

Motors Liquidation Company Avoidance Action Trust v. JPMorgan Chase Bank, N.A., et al., Case No. 09-00504, United States Bankruptcy Court, Southern District of New York. Provided deposition testimony 2017. Provided trial testimony 2017.

Great Hill Equity Partners IV, LLP, et al. v. SIG Growth Equity Fund I, LLP, et al, Civil Action No. 7906, In the Court of Chancery for the State of Delaware. Provided deposition testimony 2016. Provided trial testimony 2017.

In re: Ocwen Financial Corporation Securities Litigation, Case No. 14-81057 CIV-WPD, United States District Court, Southern District of Florida. Provided deposition testimony 2016. Provided deposition testimony 2017.

APPENDIX C

DOCUMENTS REVIEWED AND/OR RELIED UPON

Legal Documents:

[Proposed] Order Granting Motion for Preliminary Injunction, March 9, 2021.
Complaint for Injunctive Relief and for Damages, March 9, 2021.
Motion for Preliminary Injunction, March 9, 2021.
Plaintiff's Motion to Supplement Evidentiary Record in Support of its Motion for Preliminary Injunction, April 15, 2021.
Stipulation and Order for Extension of Time and Briefing Schedule and for Dismissal of Zillow Group Marketplace, Inc., March 30, 2021.

Declarations and Expert Reports:

Declaration of Brandy Lawrence (Real Estate Agent at REX), March 8, 2021.
Declaration of Craig Barrett (Vice President of Marketing at REX), March 8, 2021.
Declaration of Darren McCarty in Support of Motion to Supplement Evidentiary Record in Support of Plaintiff's Motion for Preliminary Injunction, April 15, 2021.
Declaration of Errol Samuelson (Zillow Group Chief Industry Development Officer), April 30, 2021.
Declaration of Jack Ryan (REX Co-founder and CEO), March 8, 2021.
Declaration of Josephine Maggio (Real Estate Agent at REX), March 8, 2021.
Declaration of Laura B. Najemy (Member of Legal Counsel for Zillow), April 29, 2021.
Declaration of Matt Hendricks (Director of Senior Brokerage Operations at Zillow Group), April 28, 2021, with exhibits.
Declaration of Philip Van Ham (Real Estate Agent at REX), March 7, 2021.
Declaration of Randall Echevarria (Real Estate Agent at REX), March 8, 2021.
Declaration of Raphael Rio Reina (Account Manager at REX), March 8, 2021.
Declaration of Teresa Thomas (Zillow Project Manager for Search Experience Team), April 28, 2021.
Declaration of Todd Rosenbaum (Real Estate Agent at REX), March 7, 2021.
Declaration of Viktor Kruse (Real Estate Agent at REX), March 7, 2021.
Declaration of W. Robert Majure in Support of Motion for Preliminary Injunction, March 9, 2021.
Expert Report of W. Robert Majure, Ph.D., March 9, 2021, with backup files.
Supplemental Analysis to Declaration of W. Robert Majure, in Support of Motion for Preliminary Injunction, with backup files.

Articles and Books:

Armstrong, Mark, 2006, "Competition in Two-Sided Markets," RAND Journal of Economics, Vol. 37, No. 3, 668-691.
Benjamin, John D., G. Donald Jud, and G. Stacy Sirmans, 2000, "What Do We Know About Real Estate Brokerage," Journal of Real Estate Research, Vol. 20, Nos. 1-2, 5-30.
Butz, David A., and Andrew N. Kleit, 2001, "Are Vertical Restraints Pro- or Anticompetitive? Lessons from Interstate Circuit," Journal of Law and Economics, Vol. 44, No. 1, 131-160.
Cabral, Luis M. B., 2000, Introduction to Industrial Organization, The MIT Press.
Federal Trade Commission and the U.S. Department of Justice, April 2007, "Competition in the Real Estate Brokerage Industry."
Lafontaine, Francine, and Margaret Slade, 2008, "Exclusive Contracts and Vertical Restraints: Empirical Evidence and Public Policy," Chapter 10 in Handbook of Antitrust Economics, The MIT Press.
Levitt, Steven D., and Chad Syverson, 2008, "Market Distortions When Agents Are Better Informed: The Value of Information in Real Estate Transactions," The Review of Economics and Statistics, Vol. 90, No. 4, 599-611.
NAR 2021 Handbook on Multiple Listing Policy, available at https://cdn.nar.realtor/sites/default/files/documents/2021_NAR_HMLP_210112.pdf.
National Association of Realtors, "2019 Profile of Home Staging," March 2019, available at <https://www.nar.realtor/sites/default/files/documents/2019-profile-of-home-staging-03-14-2019.pdf>.
National Association of Realtors, "2020 Profile of Home Buyers and Sellers," available at https://www.gaar.com/images/uploads/2020_NAR_Consumer_Profile.pdf.
O'Brien, Daniel P., 2020, "The Economics of Vertical Restraints in Digital Markets," in The GAI Report on the Digital Economy.

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DOCUMENTS REVIEWED AND/OR RELIED UPON

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<https://www.thebalancesmb.com/what-is-a-real-estate-broker-2866372> (accessed April 5, 2021).

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<https://www.zillow.com/agent-resources/blog/new-look-for-agents/> (accessed April 6, 2021).

<https://www.zillow.com/agent-resources/blog/real-estate-broker-vs-agent/> (accessed April 5, 2021).

<https://www.zillow.com/lender-resources/training/getting-started-with-zillow-group/getting-started-with-zillow-group-mortgages/> (accessed April 11, 2021).

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<https://www.zillow.com/premier-agent/> (accessed April 27, 2021).

<https://www.zillow.com/profile/REXchange/> (accessed April 28, 2021).

<https://www.zillow.com/report/2019/buying-a-home-in-america/home-buyers-key-facts-figures/> (accessed April 11, 2021).

<https://www.zillow.com/report/2019/buying-a-home-in-america/what-buyers-sacrifice-to-afford-a-home/> (accessed April 23, 2021).

<https://www.zillow.com/research/data/> (accessed April 14, 2021).

<https://www.zillow.com/resources/new-construction/introducing-listing-connect/> (accessed April 20, 2021).

<https://www.zillow.com/sellers-guide/average-time-to-sell-a-house/> (accessed April 27, 2021).

<https://www.zillow.com/sellers-guide/what-is-an-ibuyer/> (accessed April 7, 2021).

<https://www.zillow.com/z/offers/faq/> (accessed April 7, 2021).

<https://www.zillowclosings.com/> (accessed April 13, 2021).

<https://www.zillowgroup.com/about-us/business/> (accessed April 10, 2021).

<https://www.zillowgroup.com/about-us/story/> (accessed April 27, 2021).

<https://www.zillowgroup.com/facts-figures/> (accessed April 2, 2021).

<https://www.zillowgroup.com/streamliningzillow-industry/> (accessed April 2, 2021).

APPENDIX C

DOCUMENTS REVIEWED AND/OR RELIED UPON

Analyst Reports:

Deutsche Bank Research, “Zillow: Updating est's on Strong 2021 Outlook for Housing; TP to \$202,” February 7, 2021.

Deutsche Bank, “Zillow Continues Evolution into a Platform with Shift to Brokerage,” September 23, 2020.

Jefferies, “Zillow Deep Dive: Late to the Open House, but Coming Ready to Bid,” October 1, 2020.

Jefferies, “Zillow: Making the Right Upgrades,” February 10, 2021.

Financial Documents:

Zillow Group Inc. at Nasdaq Virtual Investor Conference, December 1, 2020.

Zillow Group Inc. at Needham Virtual Internet Services Conference, November 16, 2020.

Zillow Group Inc. Q1 2018 Earnings Call Transcript, May 7, 2018.

Zillow Group Inc. Q1 2019 Earnings Call Transcript, May 9, 2019.

Zillow Group Inc. Q4 2020 Earnings Call Transcript, February 10, 2021.

Zillow Group, Inc. SEC Form 10-K for the fiscal year ended December 31, 2020.

Zillow, Inc. SEC Form S-1, April 18, 2011.

REX Internal Data:

Close Lead Source Data.csv.

Co-listed REX properties 2-9 to 4-2.xlsx.

Co-listed REX properties through 3-3-2021.xlsx.

commissions_data.xlsx.

Number of Live Rex listings by Date.csv.

Rex_property_status.xlsx.

Rex_showing_request.csv.

seller_motivations_data.xlsx.

Showing Request by Lead Source.csv.

EXHIBIT 1**REX LISTINGS BY LOCATION
AS OF APRIL 8, 2021**

	REX Location	Number of Properties
	[A]	[B]
[1]	New York	82
[2]	Los Angeles and Orange County	59
[3]	Philadelphia	51
[4]	New Jersey	50
[5]	San Francisco Bay Area	26
[6]	Sacramento	25
[7]	Fort Lauderdale	23
[8]	Maryland	23
[9]	Chicago	21
[10]	San Bernardino and Riverside County	21
[11]	Tampa	21
[12]	Orlando	20
[13]	Denver	20
[14]	Jacksonville	17
[15]	San Diego	13
[16]	West Palm Beach	13
[17]	Boston	12
[18]	Boulder	12
[19]	Research Triangle	11
[20]	Portland	11
[21]	Bakersfield	10
[22]	Phoenix	10
[23]	San Antonio	9
[24]	Virginia	7
[25]	Las Vegas	7
[26]	Atlanta	6
[27]	Reno	6
[28]	Austin	6
[29]	Colorado Springs	5
[30]	Miami	5
[31]	Washington D.C.	5
[32]	Seattle	4
[33]	Bend	2
[34]	Provo	1
[35]	Salt Lake City	1
[36]	Charlotte	-
[37]	Fort Myers	-
[38]	Houston	-
[39]	Minneapolis	-
[40]	Stockton	-
[41]	U.S. Nationwide	426

EXHIBIT 1**REX LISTINGS BY LOCATION
AS OF APRIL 8, 2021**Notes and Sources:

- [A] Locations as defined by REX. From the <https://www.rexhomes.com/buy-with-rex> URL, clicked on each location icon and counted properties that appeared on map without zooming or re-positioning map. There is overlap between REX locations based on coordinate definitions, so listings may be double counted in those scenarios. As a result, the sum of rows [1] - [40] is greater than row [41].
- [1] https://www.rexhomes.com/homes?bounds=-79.76241800000156&bounds=39.05228756007051&bounds=-71.77749100000163&bounds=46.31154853250027&size=50&sort=publishDate%2CDESC&status=FOR_SALE&status=COMING_SOON&status=ACCEPTING_BACKUP_OFFERS&status=IN_ESCROW (accessed April 8, 2021).
- [2] https://www.rexhomes.com/homes?bounds=-120.73429200000103&bounds=32.50398977680581&bounds=-117.41298700000078&bounds=35.353308852426935&size=50&sort=publishDate%2CDESC&status=FOR_SALE&status=COMING_SOON&status=ACCEPTING_BACKUP_OFFERS&status=IN_ESCROW (accessed April 8, 2021).
- [3] https://www.rexhomes.com/homes?bounds=-76.75009533825902&bounds=38.451631999999194&bounds=-74.10862466173879&bounds=40.96870199999955&size=50&sort=publishDate%2CDESC&status=FOR_SALE&status=COMING_SOON&status=ACCEPTING_BACKUP_OFFERS&status=IN_ESCROW (accessed April 8, 2021).
- [4] https://www.rexhomes.com/homes?bounds=-75.78486865956505&bounds=39.35508899999962&bounds=-73.66377734043499&bounds=41.357364999999874&size=50&sort=publishDate%2CDESC&status=FOR_SALE&status=COMING_SOON&status=ACCEPTING_BACKUP_OFFERS&status=IN_ESCROW (accessed April 8, 2021).
- [5] https://www.rexhomes.com/homes?bounds=-123.6324969999992&bounds=36.03646639832169&bounds=-120.59656199999932&bounds=39.01866455045382&size=50&sort=publishDate%2CDESC&status=FOR_SALE&status=COMING_SOON&status=ACCEPTING_BACKUP_OFFERS&status=IN_ESCROW (accessed April 8, 2021).
- [6] https://www.rexhomes.com/homes?bounds=-122.42204800000084&bounds=37.15935393979899&bounds=-119.87775000000062&bounds=39.62946552572612&size=50&sort=publishDate%2CDESC&status=FOR_SALE&status=COMING_SOON&status=ACCEPTING_BACKUP_OFFERS&status=IN_ESCROW (accessed April 8, 2021).
- [7] https://www.rexhomes.com/homes?bounds=-81.41689080474724&bounds=25.137703999999715&bounds=-79.44352519525475&bounds=26.9709399999999&size=50&sort=publishDate%2CDESC&status=FOR_SALE&status=COMING_SOON&status=ACCEPTING_BACKUP_OFFERS&status=IN_ESCROW (accessed April 8, 2021).

EXHIBIT 1**REX LISTINGS BY LOCATION
AS OF APRIL 8, 2021**Notes and Sources (cont.):

- [8] https://www.rexhomes.com/homes?bounds=-77.68143723757272&bounds=38.17132799999948&bounds=-76.19553076242522&bounds=39.369333999999185&size=50&sort=publishDate%2CDESC&status=FOR_SALE&status=COMING_SOON&status=ACCEPTING_BACKUP_OFFERS&status=IN_ESCROW (accessed April 8, 2021).
- [9] https://www.rexhomes.com/homes?bounds=-88.7073780000009&bounds=41.19749469453981&bounds=-87.01993500000086&bounds=42.49912255091411&size=50&sort=publishDate%2CDESC&status=FOR_SALE&status=COMING_SOON&status=ACCEPTING_BACKUP_OFFERS&status=IN_ESCROW (accessed April 8, 2021).
- [10] https://www.rexhomes.com/homes?bounds=-117.80253899999894&bounds=32.733756316538404&bounds=-114.13121099999907&bounds=36.47626374034827&size=50&sort=publishDate%2CDESC&status=FOR_SALE&status=COMING_SOON&status=ACCEPTING_BACKUP_OFFERS&status=IN_ESCROW (accessed April 8, 2021).
- [11] https://www.rexhomes.com/homes?bounds=-82.94092734153735&bounds=26.94526399999883&bounds=-81.0994436584623&bounds=28.960390999999134&size=50&sort=publishDate%2CDESC&status=FOR_SALE&status=COMING_SOON&status=ACCEPTING_BACKUP_OFFERS&status=IN_ESCROW (accessed April 8, 2021).
- [12] https://www.rexhomes.com/homes?bounds=-82.58203412774485&bounds=27.6422880000014&bounds=-80.3386258722567&bounds=29.840176000001662&size=50&sort=publishDate%2CDESC&status=FOR_SALE&status=COMING_SOON&status=ACCEPTING_BACKUP_OFFERS&status=IN_ESCROW (accessed April 8, 2021).
- [13] https://www.rexhomes.com/homes?bounds=-107.63504000000093&bounds=37.95196781855243&bounds=-103.57377400000121&bounds=41.18843146889154&size=50&sort=publishDate%2CDESC&status=FOR_SALE&status=COMING_SOON&status=ACCEPTING_BACKUP_OFFERS&status=IN_ESCROW (accessed April 8, 2021).
- [14] https://www.rexhomes.com/homes?bounds=-82.42236430363953&bounds=29.261155999999772&bounds=-80.66981369636011&bounds=30.82992199999994&size=50&sort=publishDate%2CDESC&status=FOR_SALE&status=COMING_SOON&status=ACCEPTING_BACKUP_OFFERS&status=IN_ESCROW (accessed April 8, 2021).
- [15] https://www.rexhomes.com/homes?bounds=-117.61108100000018&bounds=32.220009744351074&bounds=-116.08108999999989&bounds=33.80938667985404&size=50&sort=publishDate%2CDESC&status=FOR_SALE&status=COMING_SOON&status=ACCEPTING_BACKUP_OFFERS&status=IN_ESCROW (accessed April 8, 2021).
- [16] https://www.rexhomes.com/homes?bounds=-80.88611000000168&bounds=26.140360977757553&bounds=-79.97430600000115&bounds=27.150028649650835&size=50&sort=publishDate%2CDESC&status=FOR_SALE&status=COMING_SOON&status=ACCEPTING_BACKUP_OFFERS&status=IN_ESCROW (accessed April 8, 2021).

EXHIBIT 1**REX LISTINGS BY LOCATION
AS OF APRIL 8, 2021**Notes and Sources (cont.):

- [17] https://www.rexhomes.com/homes?bounds=-72.31587899999984&bounds=41.192784137833286&bounds=-69.85894999999955&bounds=43.10481855117422&size=50&sort=publishDate%2CDESC&status=FOR_SALE&status=COMING_SOON&status=ACCEPTING_BACKUP_OFFERS&status=IN_ESCROW (accessed April 8, 2021).
- [18] https://www.rexhomes.com/homes?bounds=-105.79931687203423&bounds=39.129564000001096&bounds=-103.46880812796772&bounds=41.001716000001295&size=50&sort=publishDate%2CDESC&status=FOR_SALE&status=COMING_SOON&status=ACCEPTING_BACKUP_OFFERS&status=IN_ESCROW (accessed April 8, 2021).
- [19] https://www.rexhomes.com/homes?bounds=-79.55580399999984&bounds=35.22384835055114&bounds=-78.25371100000015&bounds=36.5309182257696&size=50&sort=publishDate%2CDESC&status=FOR_SALE&status=COMING_SOON&status=ACCEPTING_BACKUP_OFFERS&status=IN_ESCROW (accessed April 8, 2021).
- [20] https://www.rexhomes.com/homes?bounds=-123.78556700000061&bounds=44.31368297904652&bounds=-121.6514730000005&bounds=46.13993592376988&size=50&sort=publishDate%2CDESC&status=FOR_SALE&status=COMING_SOON&status=ACCEPTING_BACKUP_OFFERS&status=IN_ESCROW (accessed April 8, 2021).
- [21] https://www.rexhomes.com/homes?bounds=-120.19414600000056&bounds=34.184038929700705&bounds=-117.61619500000023&bounds=36.39279314534855&size=50&sort=publishDate%2CDESC&status=FOR_SALE&status=COMING_SOON&status=ACCEPTING_BACKUP_OFFERS&status=IN_ESCROW (accessed April 8, 2021).
- [22] https://www.rexhomes.com/homes?bounds=-114.67774264115391&bounds=31.426075000000793&bounds=-109.12370735884576&bounds=37.00300700000042&size=50&sort=publishDate%2CDESC&status=FOR_SALE&status=COMING_SOON&status=ACCEPTING_BACKUP_OFFERS&status=IN_ESCROW (accessed April 8, 2021).
- [23] https://www.rexhomes.com/homes?bounds=-98.92014699999976&bounds=28.931528640785558&bounds=-97.63114400000026&bounds=30.31968330610451&size=50&sort=publishDate%2CDESC&status=FOR_SALE&status=COMING_SOON&status=ACCEPTING_BACKUP_OFFERS&status=IN_ESCROW (accessed April 8, 2021).
- [24] https://www.rexhomes.com/homes?bounds=-77.96220299999898&bounds=38.46419428513096&bounds=-77.03226699999841&bounds=39.36064592556855&size=50&sort=publishDate%2CDESC&status=FOR_SALE&status=COMING_SOON&status=ACCEPTING_BACKUP_OFFERS&status=IN_ESCROW (accessed April 8, 2021).
- [25] https://www.rexhomes.com/homes?bounds=-116.07566716938685&bounds=35.00185700000043&bounds=-113.864100830615&bounds=36.85366200000058&size=50&sort=publishDate%2CDESC&status=FOR_SALE&status=COMING_SOON&status=ACCEPTING_BACKUP_OFFERS&status=IN_ESCROW (accessed April 8, 2021).

EXHIBIT 1**REX LISTINGS BY LOCATION
AS OF APRIL 8, 2021**Notes and Sources (cont.):

- [26] https://www.rexhomes.com/homes?bounds=-84.85071300000045&bounds=33.483722356061335&bounds=-84.02371300000097&bounds=34.2047788334327&size=50&sort=publishDate%2CDESC&status=FOR_SALE&status=COMING_SOON&status=ACCEPTING_BACKUP_OFFERS&status=IN_ESCROW (accessed April 8, 2021).
- [27] https://www.rexhomes.com/homes?bounds=-122.21247164704758&bounds=38.5023489999997&bounds=-118.44260935295188&bounds=41.99747699999955&size=50&sort=publishDate%2CDESC&status=FOR_SALE&status=COMING_SOON&status=ACCEPTING_BACKUP_OFFERS&status=IN_ESCROW (accessed April 8, 2021).
- [28] https://www.rexhomes.com/homes?bounds=-98.29769539455836&bounds=29.752444000000565&bounds=-97.02436560544243&bounds=30.906188000000284&size=50&sort=publishDate%2CDESC&status=FOR_SALE&status=COMING_SOON&status=ACCEPTING_BACKUP_OFFERS&status=IN_ESCROW (accessed April 8, 2021).
- [29] https://www.rexhomes.com/homes?bounds=-105.3304439999991&bounds=38.30832709752258&bounds=-104.05158899999924&bounds=39.3386411272258&size=50&sort=publishDate%2CDESC&status=FOR_SALE&status=COMING_SOON&status=ACCEPTING_BACKUP_OFFERS&status=IN_ESCROW (accessed April 8, 2021).
- [30] https://www.rexhomes.com/homes?bounds=-80.90909315934007&bounds=25.137704000000724&bounds=-80.00685084066144&bounds=25.979434000000566&size=50&sort=publishDate%2CDESC&status=FOR_SALE&status=COMING_SOON&status=ACCEPTING_BACKUP_OFFERS&status=IN_ESCROW (accessed April 8, 2021).
- [31] https://www.rexhomes.com/homes?bounds=-77.12045543670195&bounds=38.7916449999999&bounds=-76.9086885632974&bounds=38.99584499999946&size=50&sort=publishDate%2CDESC&status=FOR_SALE&status=COMING_SOON&status=ACCEPTING_BACKUP_OFFERS&status=IN_ESCROW (accessed April 8, 2021).
- [32] https://www.rexhomes.com/homes?bounds=-122.85229099999967&bounds=46.699621362094064&bounds=-120.90742499999934&bounds=48.326887710720115&size=50&sort=publishDate%2CDESC&status=FOR_SALE&status=COMING_SOON&status=ACCEPTING_BACKUP_OFFERS&status=IN_ESCROW (accessed April 8, 2021).
- [33] https://www.rexhomes.com/homes?bounds=-122.00236200000032&bounds=43.203073986868276&bounds=-119.89658100000011&bounds=44.79316564335858&size=50&sort=publishDate%2CDESC&status=FOR_SALE&status=COMING_SOON&status=ACCEPTING_BACKUP_OFFERS&status=IN_ESCROW (accessed April 8, 2021).
- [34] https://www.rexhomes.com/homes?bounds=-112.26021600000011&bounds=39.69890963494444&bounds=-110.85764699999986&bounds=40.99779339509752&size=50&sort=publishDate%2CDESC&status=FOR_SALE&status=COMING_SOON&status=ACCEPTING_BACKUP_OFFERS&status=IN_ESCROW (accessed April 8, 2021).

EXHIBIT 1**REX LISTINGS BY LOCATION
AS OF APRIL 8, 2021**Notes and Sources (cont.):

- [35] https://www.rexhomes.com/homes?bounds=-112.26021599999962&bounds=40.335461248930955&bounds=-111.5531879999998&bounds=40.99986510511536&size=50&sort=publishDate%2CDESC&status=FOR_SALE&status=COMING_SOON&status=ACCEPTING_BACKUP_OFFERS&status=IN_ESCROW (accessed April 8, 2021).
- [36] https://www.rexhomes.com/homes?bounds=-81.08120518363023&bounds=34.81390599999963&bounds=-80.2532958163705&bounds=35.51478499999995&size=50&sort=publishDate%2CDESC&status=FOR_SALE&status=COMING_SOON&status=ACCEPTING_BACKUP_OFFERS&status=IN_ESCROW (accessed April 8, 2021).
- [37] https://www.rexhomes.com/homes?bounds=-82.3350399999996&bounds=25.60067808664209&bounds=-80.87274799999972&bounds=26.95656008259958&size=50&sort=publishDate%2CDESC&status=FOR_SALE&status=COMING_SOON&status=ACCEPTING_BACKUP_OFFERS&status=IN_ESCROW (accessed April 8, 2021).
- [38] https://www.rexhomes.com/homes?bounds=-96.62198000000085&bounds=28.677859077629535&bounds=-94.35339300000071&bounds=30.715588368227657&size=50&sort=publishDate%2CDESC&status=FOR_SALE&status=COMING_SOON&status=ACCEPTING_BACKUP_OFFERS&status=IN_ESCROW (accessed April 8, 2021).
- [39] https://www.rexhomes.com/homes?bounds=-94.0122690000005&bounds=44.559007678286974&bounds=-92.73958300000068&bounds=45.48923292606506&size=50&sort=publishDate%2CDESC&status=FOR_SALE&status=COMING_SOON&status=ACCEPTING_BACKUP_OFFERS&status=IN_ESCROW (accessed April 8, 2021).
- [40] https://www.rexhomes.com/homes?bounds=-121.66942465723909&bounds=37.481782999999865&bounds=-120.83230134276039&bounds=38.30025199999966&size=50&sort=publishDate%2CDESC&status=FOR_SALE&status=COMING_SOON&status=ACCEPTING_BACKUP_OFFERS&status=IN_ESCROW (accessed April 8, 2021).
- [41] https://www.rexhomes.com/homes?bounds=-127.18881072471797&bounds=20.024434366561053&bounds=-62.85729703326089&bounds=56.79168453592135&size=50&sort=publishDate%2CDESC&status=FOR_SALE&status=COMING_SOON&status=ACCEPTING_BACKUP_OFFERS&status=IN_ESCROW (accessed April 8, 2021).

EXHIBIT 2

COMPARISON OF REX AND ZILLOW LISTINGS
TOP REX LOCATIONS

REX Location	Zillow Location	Zillow MSA	Number of Properties		REX as % of Zillow
			REX	Zillow	
[A]	[B]	[C]	[D]	[E]	[F]
[1] New York and New Jersey	New York, NY	New York-Newark-Jersey City	132	43,376	0.3%
[2] Los Angeles and Orange County	Los Angeles-Long Beach-Anaheim, CA	Los Angeles-Long Beach-Anaheim	59	12,195	0.5%
[3] Philadelphia	Philadelphia, PA	Philadelphia-Camden-Wilmington	51	9,970	0.5%
[4] Fort Lauderdale, Miami and West Palm Beach	Miami-Fort Lauderdale, FL	Miami-Fort Lauderdale-Pompano Beach	41	37,459	0.1%
[5] San Francisco Bay Area	San Francisco, CA	San Francisco-San Mateo-Redwood City	26	4,283	0.6%
[6] Sacramento	Sacramento, CA	Sacramento-Roseville-Folsom	25	2,250	1.1%
[7] Maryland	Baltimore, MD	Baltimore-Columbia-Towson	23	3,765	0.6%
[8] Chicago	Chicago, IL	Chicago	21	21,397	0.1%
[9] San Bernardino and Riverside County	Riverside, CA	Riverside-San Bernardino-Ontario	21	5,362	0.4%
[10] U.S. Nationwide			426	595,379	0.1%

Notes and Sources:

REX data as of April 8, 2021. Zillow data as of March 27, 2021. REX locations are not listed by MSA, and therefore are matched to the best corresponding MSA that appears in the Zillow data.

[A],[D] From Exhibit 1. [1][D] is the sum of New York listings and New Jersey listings. [4][D] is the sum of Fort Lauderdale, Miami and West Palm Beach listings. There is overlap between REX locations based on coordinate definitions, so listings may be double counted in those scenarios.

[E] From Zillow inventory data, downloaded on April 28, 2021 from <https://www.zillow.com/research/data/> (Data Type: For-Sale Inventory (Smooth, All Homes, Weekly View) | Geography: Metro and U.S.). Data are reported by Metropolitan Statistical Area (MSA). For-Sale Inventory defined as the count of unique listings that were active at any time in a given month. See, <https://www.zillow.com/research/data/> (accessed April 14, 2021).

[1][B],[C] The Zillow New York, NY location is properly defined as the New York-Newark-Jersey City MSA. See, <https://censusreporter.org/profiles/31000US37980-new-york-newark-jersey-city-ny-nj-pa-metro-area/> (accessed April 13, 2021).

[2][B],[C] The Zillow Los Angeles-Long Beach-Anaheim, CA location is properly defined as the Los Angeles-Long Beach-Anaheim MSA. See, <https://censusreporter.org/profiles/31000US31080-los-angeles-long-beach-anaheim-ca-metro-area/> (accessed April 13, 2021).

[3][B],[C] The Zillow Philadelphia, PA location is properly defined as the Philadelphia-Camden-Wilmington MSA. See, <https://censusreporter.org/profiles/31000US37980-philadelphia-camden-wilmington-pa-nj-de-md-metro-area/> (accessed April 13, 2021).

[4][B],[C] The Zillow Miami-Fort Lauderdale, FL location is properly defined as the Miami-Fort Lauderdale-Pompano Beach MSA. See, <https://censusreporter.org/profiles/31000US33100-miami-fort-lauderdale-pompano-beach-fl-metro-area/> (accessed April 13, 2021). Data for this location only available as of January 2, 2021.

[5][B],[C] The Zillow San Francisco, CA location is properly defined as the San Francisco-San Mateo-Redwood City MSA. See, <https://censusreporter.org/profiles/31400US4186041884-san-francisco-san-mateo-redwood-city-ca-metro-division/> (accessed April 13, 2021).

[6][B],[C] The Zillow Sacramento, CA location is properly defined as the Sacramento-Roseville-Folsom MSA. See, <https://censusreporter.org/profiles/31000US40900-sacramento-roseville-folsom-ca-metro-area/> (accessed April 13, 2021).

[7][B],[C] The Zillow Baltimore, MD location is properly defined as the Baltimore-Columbia-Towson MSA. See, <https://censusreporter.org/profiles/31000US12580-baltimore-columbia-towson-md-metro-area/> (accessed April 13, 2021).

EXHIBIT 2

**COMPARISON OF REX AND ZILLOW LISTINGS
TOP REX LOCATIONS**

Notes and Sources (cont.):

[8][B],[C] The Zillow Chicago, IL location is properly defined as the Chicago MSA. See, <https://censusreporter.org/profiles/16000US1714000-chicago-il/> (accessed April 13, 2021).

[9][B],[C] The Zillow Riverside, CA location is properly defined as the Riverside-San Bernardino-Ontario MSA. See, <https://censusreporter.org/profiles/31000US40140-riverside-san-bernardino-ontario-ca-metro-area/> (accessed April 13, 2021).

[F] = [D] / [E].

EXHIBIT 3
FILED UNDER SEAL

EXHIBIT 4

**ILLUSTRATIVE NET BENEFITS OF LISTING WITH REX
AT DIFFERENT HOME PRICE DIFFERENTIALS AND COMMISSION SAVINGS**

REX Commission		Home Price Difference on MLS Relative to REX (Final Negotiated Price, Before Commissions)										
Savings		0.0%	0.5%	1.0%	1.5%	2.0%	2.5%	3.0%	3.5%	4.0%	4.5%	5.0%
[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]	[J]	[K]	[L]	
2.5%	2.5%	2.0%	1.6%	1.1%	0.6%	0.1%	0.3%	0.8%	1.3%	1.8%	2.2%	
2.4%	2.4%	1.9%	1.5%	1.0%	0.5%	0.0%	0.4%	0.9%	1.4%	1.9%	2.3%	
2.3%	2.3%	1.8%	1.4%	0.9%	0.4%	0.1%	0.5%	1.0%	1.5%	2.0%	2.4%	
2.2%	2.2%	1.7%	1.3%	0.8%	0.3%	0.2%	0.6%	1.1%	1.6%	2.1%	2.5%	
2.1%	2.1%	1.6%	1.2%	0.7%	0.2%	0.3%	0.7%	1.2%	1.7%	2.2%	2.6%	
2.0%	2.0%	1.5%	1.1%	0.6%	0.1%	0.4%	0.8%	1.3%	1.8%	2.3%	2.7%	
1.9%	1.9%	1.4%	1.0%	0.5%	0.0%	0.5%	0.9%	1.4%	1.9%	2.4%	2.8%	
1.8%	1.8%	1.3%	0.9%	0.4%	0.1%	0.6%	1.0%	1.5%	2.0%	2.5%	2.9%	
1.7%	1.7%	1.2%	0.8%	0.3%	0.2%	0.7%	1.1%	1.6%	2.1%	2.6%	3.0%	
1.6%	1.6%	1.1%	0.7%	0.2%	0.3%	0.8%	1.2%	1.7%	2.2%	2.7%	3.1%	
1.5%	1.5%	1.0%	0.6%	0.1%	0.4%	0.9%	1.3%	1.8%	2.3%	2.8%	3.2%	
1.4%	1.4%	0.9%	0.5%	0.0%	0.5%	1.0%	1.4%	1.9%	2.4%	2.9%	3.3%	
1.3%	1.3%	0.8%	0.4%	0.1%	0.6%	1.1%	1.5%	2.0%	2.5%	3.0%	3.4%	
1.2%	1.2%	0.7%	0.3%	0.2%	0.7%	1.2%	1.6%	2.1%	2.6%	3.1%	3.5%	
1.1%	1.1%	0.6%	0.2%	0.3%	0.8%	1.3%	1.7%	2.2%	2.7%	3.2%	3.6%	
1.0%	1.0%	0.5%	0.1%	0.4%	0.9%	1.4%	1.8%	2.3%	2.8%	3.3%	3.7%	
0.9%	0.9%	0.4%	0.0%	0.5%	1.0%	1.5%	1.9%	2.4%	2.9%	3.4%	3.8%	
0.8%	0.8%	0.3%	0.1%	0.6%	1.1%	1.6%	2.0%	2.5%	3.0%	3.5%	3.9%	
0.7%	0.7%	0.2%	0.2%	0.7%	1.2%	1.7%	2.1%	2.6%	3.1%	3.6%	4.0%	
0.6%	0.6%	0.1%	0.3%	0.8%	1.3%	1.8%	2.2%	2.7%	3.2%	3.7%	4.1%	
0.5%	0.5%	0.0%	0.4%	0.9%	1.4%	1.9%	2.3%	2.8%	3.3%	3.8%	4.2%	

Notes and Sources:

Cells reflect net benefit of listing with REX at given REX commission savings and price differential relative to MLS. For example, if REX enables commission savings of 2.5 percentage points, but the home would have sold for 1.0 percent higher on the MLS, net benefits of listing with REX would be 1.6 percent. Cells are calculated as REX Commission Savings – (1 – 5.5%) × Home Price Difference. Calculations assume 5.5 percent commissions on MLS. See, Majure Report, at p. 26.

Dr. Majure claims that REX offers average commission savings of 0.7 to 1.2 percentage points relative to discount brokerages, such as Redfin, and average commission savings of 2.2 percentage points relative to traditional brokerages listing on the MLS. Majure Report, at pp. 26-27.

EXHIBIT 5

ILLUSTRATIVE CONSUMER BENEFITS OF IMPROVED LISTING DATA
ZILLOW AGGREGATION WEBSITES

Value of Improved Data	% of Homebuyers Using Zillow Sites Benefiting from Improved Data											
	[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]	[J]	[K]	[L]
\$1.00	\$0.2	\$0.4	\$0.9	\$0.9	\$1.3	\$1.7	\$2.2	\$2.6	\$3.0	\$3.5	\$3.9	\$4.1
\$2.00	\$0.4	\$0.9	\$1.7	\$1.7	\$2.6	\$3.5	\$4.3	\$5.2	\$6.1	\$6.9	\$7.8	\$8.2
\$3.00	\$0.7	\$1.3	\$2.6	\$2.6	\$3.9	\$5.2	\$6.5	\$7.8	\$9.1	\$10.4	\$11.7	\$12.4
\$4.00	\$0.9	\$1.7	\$3.5	\$3.5	\$5.2	\$6.9	\$8.7	\$10.4	\$12.1	\$13.9	\$15.6	\$16.5
\$5.00	\$1.1	\$2.2	\$4.3	\$4.3	\$6.5	\$8.7	\$10.8	\$13.0	\$15.2	\$17.3	\$19.5	\$20.6
\$6.00	\$1.3	\$2.6	\$5.2	\$5.2	\$7.8	\$10.4	\$13.0	\$15.6	\$18.2	\$20.8	\$23.4	\$24.7
\$7.00	\$1.5	\$3.0	\$6.1	\$6.1	\$9.1	\$12.1	\$15.2	\$18.2	\$21.2	\$24.3	\$27.3	\$28.8
\$8.00	\$1.7	\$3.5	\$6.9	\$6.9	\$10.4	\$13.9	\$17.3	\$20.8	\$24.3	\$27.7	\$31.2	\$32.9
\$9.00	\$2.0	\$3.9	\$7.8	\$7.8	\$11.7	\$15.6	\$19.5	\$23.4	\$27.3	\$31.2	\$35.1	\$37.1
\$10.00	\$2.2	\$4.3	\$8.7	\$8.7	\$13.0	\$17.3	\$21.7	\$26.0	\$30.3	\$34.7	\$39.0	\$41.2
\$11.00	\$2.4	\$4.8	\$9.5	\$9.5	\$14.3	\$19.1	\$23.8	\$28.6	\$33.4	\$38.1	\$42.9	\$45.3
\$12.00	\$2.6	\$5.2	\$10.4	\$10.4	\$15.6	\$20.8	\$26.0	\$31.2	\$36.4	\$41.6	\$46.8	\$49.4
\$13.00	\$2.8	\$5.6	\$11.3	\$11.3	\$16.9	\$22.5	\$28.2	\$33.8	\$39.4	\$45.1	\$50.7	\$53.5
\$14.00	\$3.0	\$6.1	\$12.1	\$12.1	\$18.2	\$24.3	\$30.3	\$36.4	\$42.5	\$48.5	\$54.6	\$57.6
\$15.00	\$3.3	\$6.5	\$13.0	\$13.0	\$19.5	\$26.0	\$32.5	\$39.0	\$45.5	\$52.0	\$58.5	\$61.8
\$16.00	\$3.5	\$6.9	\$13.9	\$13.9	\$20.8	\$27.7	\$34.7	\$41.6	\$48.5	\$55.5	\$62.4	\$65.9
\$17.00	\$3.7	\$7.4	\$14.7	\$14.7	\$22.1	\$29.5	\$36.8	\$44.2	\$51.6	\$58.9	\$66.3	\$70.0
\$18.00	\$3.9	\$7.8	\$15.6	\$15.6	\$23.4	\$31.2	\$39.0	\$46.8	\$54.6	\$62.4	\$70.2	\$74.1
\$19.00	\$4.1	\$8.2	\$16.5	\$16.5	\$24.7	\$32.9	\$41.2	\$49.4	\$57.6	\$65.9	\$74.1	\$78.2
\$20.00	\$4.3	\$8.7	\$17.3	\$17.3	\$26.0	\$34.7	\$43.3	\$52.0	\$60.7	\$69.3	\$78.0	\$82.3

Notes and Sources:

Cells reflect total value (in millions USD) of consumer benefits based on given percentage of homebuyers using Zillow benefiting from improved data and given value of improved data. Calculated as 6.5 million home sales in 2020 × 67% of homebuyers using Zillow × % benefiting from improved data × value of improved data.

6.5 million home sales in 2020 from Zillow Group, Inc. SEC Form 10-K for the fiscal year ended December 31, 2020, at p. 6 (citing the 2020 U.S. Census Bureau and National Association of REALTORS®).

67% of homebuyers using Zillow from Jefferies, “Zillow Deep Dive: Late to the Open House, but Coming Ready to Bid,” October 1, 2020, at p. 9.

Light gray shading represents cells greater than \$6.35 million, the midpoint of maximum REX potential commission savings relative to Redfin in 2020. Dark gray shading represents cells greater than \$14.7 million, the maximum REX potential commission savings relative to MLS in 2020. See, Hubbard Report, at p. 36.